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HYPERTENSIVE CARDIOVASCULAR DISEASE

EFFECT OF THORACOLUMBAR SPLANCHNICECTOMY ON MORTALITY AND SURVIVAL RATES

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Diets low in sodium and fat, drugs having a sedative or hypotensive effect, and surgical intervention on the sympathetic nervous system are the principal measures which are available at the present time for the management of hypertensive cardiovascular disease. Since the cause of this disorder is unknown, none of these measures can be regarded as a specific form of treatment. Nevertheless, they have all been shown to be of some therapeutic value. Numerous articles have appeared in the literature in recent years, dealing with the effects of these measures on blood pressure levels and responses, on the cardiovascular system, and on symptoms. There is as yet, however, little information concerning the effect of treatment on life expectancy. This is due to the fact that it requires a long follow-up of large numbers of consecutive patients treated in a particular fashion, accompanied with suitable control data, in order to determine whether the mortality rate has been affected significantly.

The primary objective of the surgical treatment of hypertensive cardiovascular disease was to determine whether the prognosis for these patients could be significantly improved. Although my own interest in this problem extends back over a period of 17 years, it was not until 1938 that a standardized surgical procedure was adopted after years of trial and error with every conceivable variation of sympathectomy. Since 1938, approximately 3,000 patients have been referred to me for consideration of surgical treatment. Of these, approximately two-thirds have been operated on, and one-third have been treated medically. The majority of these cases have not been followed long enough to be included in the discussion at this time. They will be reported on as soon as the duration of follow-up permits. A continuous follow-up study is in progress. As a consequence, the data are at all times approximately 98% complete. Less than 2% of the patients have not been followed. The purpose of this communication is to discuss the effect of thoracolumbar splanchnicectomy on the mortality and survival rates of the first 892 patients in this series. They were seen during the years 1938 to 1946, inclusive, and have been followed at least four and at most 12 years.

TABLE 1.—*Mortality Among Hypertensive Patients Not Treated Surgically*

Author	Number of Cases	Time Followed (Yr.)	Mortality (%)
Janeway (1913)	244	5-10	81
Blackford, Bowers, and Baker (1930)	202	5-11	50
Keith, Wagener, and Barker (1939)	219	5- 9	91
Rasmussen and Boe (1945)	100	6	52
Bechgaard (1946)	1,038	4-11	28
Palmer, Loofbourow, and Doering (1948)	430	8 (average)	61
Perera (1948)	250	12 (average)	17
Hammarström and Bechgaard (1950)	435	2-10	51

From this material, together with other data which have accumulated in the literature, it is possible to gather a rather clear impression of the effect of this operation on the prognosis for patients with hypertensive cardiovascular disease.

MORTALITY FOR HYPERTENSIVE PATIENTS NOT TREATED SURGICALLY

From time to time since the introduction of the sphygmomanometer at the turn of the century, physicians have reported on the deaths resulting from hypertensive cardiovascular disease. Starting with the study of Janeway in 1913,[1] additional reports have continued to appear in the literature. Representative of these are the publications of Blackford, Bowers, and Baker (1930) [2]; Keith, Wagener, and Barker (1939) [3]; Rasmussen and Boe (1945) [4]; Bechgaard (1946) [5]; Palmer, Loof-

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1. Janeway, T. C.: A Clinical Study of Hypertensive Cardiovascular Disease, Arch. Int. Med. **12**: 755 (Dec.) 1913.
2. Blackford, J. M.; Bowers, J. M., and Baker, J. W.: A Follow-Up Study of Hypertension, J. A. M. A. **94**: 328 (Feb. 1) 1930.
3. Keith, N. M.; Wagener, H. P., and Barker, N. W.: Some Different Types of Essential Hypertension: Their Course and Prognosis, Am. J. M. Sc. **197**: 332, 1939.
4. Rasmussen, H., and Boe, J.: Prognosis of Essential Hypertension, with Remarks Respecting Indications for Operative Treatment, Acta med. Scandinav. **120**: 12, 1945.
5. Bechgaard, P.: Arterial Hypertension: A Follow-Up Study of 1,000 Hypertonics, Acta med. Scandinav. supp. 172, p. 3, 1946.

bourow, and Doering (1948) [6]; Perera (1948) [7]; and Hammarström and Bechgaard (1950).[8] Their findings are summarized in Table 1. A study of these data indicates that the mortality rate for the different groups of patients varies tremendously, from 17 to 91%. While the duration of follow-up also varies, it is apparent that this is not an adequate explanation for the marked difference in mortality rates. A detailed study of these reports as well as of my own material indicates that the amount of cardiovascular disease which exists when the patient is first seen is extremely important for prognosis.

TABLE 2.—*Mortality Rates for Nonsurgically Treated Hypertensive Patients Grouped According to Criteria of Keith, Wagener, and Barker*

	Nonsurgical Series (K., W. and B.)					Nonsurgical Series (Smithwick)				
Group	No. of Cases	No. of Deaths at 5 Yr.	Mortality at 5 Yr. (%)	No. of Deaths at 5-10 Yr.	Mortality at 5-10 Yr. (%)	No. of Cases	No. of Deaths at 5 Yr.	Mortality at 5 Yr. (%)	No. of Deaths at 5-10 Yr.	Mortality at 5-10 Yr. (%)
1	10	3	30.0	4	40.0	59	18	30.5	22	37.0
2	26	12	46.3	17	65.4	53	22	41.5	23	43.5
3	37	30	81.0	34	92.0	52	37	71.0	41	79.0
4	146	145	99.4	145	99.4	28	28	100.0	28	100.0
Totals	219	190	87.0	200	91.2	192	105	55.0	114	59.5

TABLE 3.—*Mortality Rates for 411 Nonsurgically and 538 Surgically Treated Hypertensive Patients Grouped According to Criteria of Keith, Wagener, and Barker*

	Nonsurgical Series (K., W., and B. plus Smithwick)					Surgical Series (Smithwick)				
Group	No. of Cases	No. of Deaths at 5 Yr.	Mortality at 5 Yr. (%)	No. of Deaths at 5-10 Yr.	Mortality at 5-10 Yr. (%)	No. of Cases	No. of Deaths at 5 Yr.	Mortality at 5 Yr. (%)	No. of Deaths at 5-12 Yr.	Mortality at 5-12 Yr. (%)
1	69	21	30.4	26	37.6	165	17	10.3	25	15.1
2	79	34	43.0	40	50.5	142	24	16.9	37	26.0
3	89	67	75.4	75	84.5	154	53	34.5	69	45.0
4	174	173	99.5	173	99.5	77	38	49.5	43	56.0
Totals	411	295	72.0	314	77.0	538	132	24.6	174	32.4

TABLE 4.—*Mortality Rates for Nonsurgically and Surgically Treated Hypertensive Patients Grouped According to Smithwick Criteria*

	Nonsurgical Series (Smithwick)					Surgical Series (Smithwick)				
Group	No. of Cases	No. of Deaths at 4 Yr.	Mortality at 4 Yr. (%)	No. of Deaths at 4-10 Yr.	Mortality at 4-10 Yr. (%)	No. of Cases	No. of Deaths at 4 Yr.	Mortality at 4 Yr. (%)	No. of Deaths at 4-12 Yr.	Mortality at 4-12 Yr. (%)
1	59	6	10	8	14	60	2	3	4	7
2	115	38	33	42	37	325	39	12	70	22
3	59	34	58	42	71	115	22	19	39	34
4	63	55	87	57	90	96	50	52	63	65
Total	296	133	45	149	51	596	113	19	176	30

There is no significant difference in mortality rates between surgically and nonsurgically treated patients in Group 1. The mortality rate for surgically treated Group 2 and 3 patients is significantly lower than that of the nonsurgically treated patients, both for the first four years of observation and for the entire period of observation. The same is true for surgically treated Group 4 patients. The eventual mortality rate for Group 4 patients is high (Fig. 2).

PROGNOSIS FOR HYPERTENSIVE PATIENTS GROUPED ACCORDING TO CRITERIA OF KEITH, WAGENER, AND BARKER

Keith, Wagener, and Barker [3] of the Mayo Clinic were the first to recognize the fact that the prognosis for a hypertensive patient varies according to the status of his cardiovascular system when first examined. In an outstanding communication, they showed that the prognosis varied according to the changes noted on examination of the eyegrounds. A series of 219 cases was divided into four groups according to eyeground changes, and the mortality and survival rates for each group were calculated after a five to nine year period had elapsed. The patients in Group 1 had mild narrowing or sclerosis of the retinal arteries. Those in Group 2 had moderate to marked sclerosis of the retinal arteries, characterized especially by exaggeration of the arterial reflex and arteriovenous compression. Group 3 contained patients with angiospastic retinitis, characterized especially by edema, cotton-wool exudate, and hemorrhages in the retina, superimposed on a combination of sclerotic and spastic lesions in the arteries. If measurable edema of the optic disks was added to this picture, the case was placed in Group 4.

The mortality rates for the 219 cases of Keith, Wagener, and Barker are given in Table 2. A similar group of 192 consecutively studied patients who were referred to me during the years 1940 to 1945, inclusive, and who were also not operated on is included in this same table. A study of the findings indicates that the mor-

6. Palmer, R. S.; Loofbourow, D., and Doering, C. R.: Prognosis in Essential Hypertension: An Eight-Year Follow-Up Study of 430 Patients on Conventional Medical Treatment, New England J. Med. **239**: 990, 1948.

7. Perera, G. A.: Diagnosis and Natural History of Hypertensive Vascular Disease, Am. J. Med. **4**: 416, 1948.

8. Hammarström, S., and Bechgaard, P.: Prognosis in Arterial Hypertension: A Comparison Between 251 Patients After Sympathectomy and a Selected Series of 435 Non-Operated Patients, Am. J. Med. **8**: 53, 1950.

V 14
1951

tality rates in the two series for each group are comparable. For this reason, and in order to obtain a larger control series to compare with a similar number of consecutive cases treated surgically, these two control series have been combined, and the mortality rates are compared with those for the surgical series in Table 3. All the control patients as well as those treated surgically were followed for a minimal period of five years and a maximal period of 12 years. A study of the data in Table 3 indicates that the mortality rate for each of the four groups is significantly lower in the surgical series. These same data are presented in the form of survival curves in Figure 1. A thoracolumbar splanchnicectomy, first described in 1940, was performed on all of the patients in the surgical series. These 538 cases were operated on consecutively during the years 1938 to 1944, inclusive. It is quite clear that surgical therapy has significantly prolonged the life expectancy of these patients.

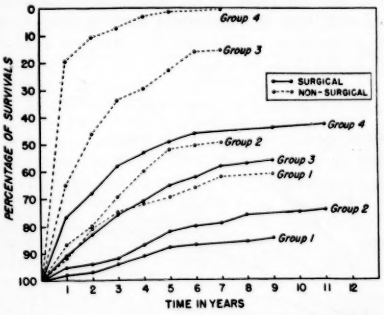

Fig. 1.—Survival curves for surgically and nonsurgically treated hypertensive patients grouped according to Keith, Wagener, and Barker criteria.

PROGNOSIS FOR HYPERTENSIVE PATIENTS GROUPED ACCORDING TO THE CRITERIA OF HAMMARSTRÖM AND BECHGAARD

In a similar study of a smaller number of cases followed for a shorter period of time, Hammarström and Bechgaard [5] recently reported that splanchnicectomy had significantly modified the prognosis for the severer forms of hypertensive cardiovascular disease. They divided their cases into four groups. Group 1 contained patients with uncomplicated hypertensive cardiovascular disease, and no cases of this sort were operated on. The prognosis for these patients was considered good, as indicated by the report of Bechgaard [5] referred to in Table 1. Group 2 includes those with marked subjective symptoms but without signs of myocardial damage. They may show left axis deviation in the electrocardiogram, and/or a relative enlargement of the left ventricle if the heart volume is within normal limits according to teleroentgenography. The retinal changes in the patients in their second group are classified as Group 1 or 2 according to Keith and Wagener. Group 3 includes those with the same eyeground changes or, in addition, retinal hemorrhages with or without signs of thrombosis of the retinal vessels. Patients in Group 3 further show one or more of the following signs of cardiovascular damage: negative T_1 in the electrocardiogram, heart volume above the predicted normal (500 ml. per square meter of body surface in men, and 450 ml. per square meter in women, or the transverse diameter of the heart greater than one-half the inner thoracic diameter),

TABLE 5.—*Comparison of Prognosis in 435 Unoperated Hypertensive Patients Followed 2 to 10 Years, with that in 251 Hypertensive Patients Followed 2 to 8 Years After Sympathectomy*

(Hammarström and Bechgaard, 1950)

		Unoperated			Operated		
Group	Sex	No. Cases	No. Deaths	Mortality (%)	No. Cases	No. Deaths	Mortality (%)
2	M	42	9	21.4	29	4	13.8
	F	122	21	17.2	58	0	0.0
	Totals	164	30	18.3	87	4	4.6
3	M	83	57	68.7	35	9	25.7
	F	94	44	46.8	50	8	16.0
	Totals	177	101	57.1	85	17	20.0
4	M	69	68	98.7	38	18	47.3
	F	25	24	96.2	41	16	38.9
	Totals	94	92	97.8	79	34	43.0

residual damage after cerebral insult, and constant albuminuria. In Group 4 they include all hypertensive patients with definite retinal exudates and/or papillary protrusion, since they found the life expectancy to be about the same if the patients in this group did or did not have papillary protrusion. Patients with cardiac decompensation at rest, auricular fibrillation, myocardial infarct, or renal insufficiency were not included in the nonoperated series. A few patients in the operated series had cardiac insufficiency and were compensated with digitalis before operation, while another minor group showed renal insufficiency before operation. All of them died, mostly within a year after operation. In order to find comparable patients for a control series, 435 nonoperated cases were selected from 130,000 records of hypertensive patients from various hospitals in Denmark

TABLE 6.—*Numerical Value of Various Factors Which Influence Prognosis*

	Numerical Value of Each Factor
Cerebrovascular accident without or with minor residual...	1
Abnormal ECG	
Enlarged heart	
Impending failure	
P. S. P.* less than 25% in 15 min., or less than 60% in 2 hr.	
Age 50 or over	
Mild angina	
Cerebrovascular accident, with residual†	2
Frank congestive failure, moderate angina	
P. S. P.* less than 20% in 15 min	
Unsatisfactory response to sedation	
P. S. P.* less than 15% in 15 min	3
Nitrogen retention	4

* Phenolsulfonphthalein.
† Cerebral deterioration or definite involvement of arm and/or leg.

and Sweden. The mortality rates for their two series are summarized in Table 5. The findings are similar to those already referred to in Table 3 and Figure 1.

PROGNOSIS FOR HYPERTENSIVE PATIENTS GROUPED ACCORDING TO MY CRITERIA

During the years 1940 to 1946, inclusive, 296 patients were referred to me for study who were not operated on. During the years 1938 to 1944, inclusive, 596 patients

were referred for study and were operated on. At that time, no satisfactory criteria for operation were available. These 892 patients were studied in a similar fashion, and operation was suggested to them as offering a reasonable or a slight chance for a worthwhile result according to the status of their cardiovascular systems when first studied. The majority of the patients elected to be operated on. Those who decided to follow a medical regimen make up the control series. All cases in both series have been followed for a minimal period of four years and a maximal period of 12 years.

These patients were divided into four groups, using criteria which differ somewhat from those already referred to. The plan adopted is designed to control as many of the variable factors as possible, in an attempt to make the patient material in each group as comparable as possible. Soon we shall be dealing with a much larger number of cases. More groups can then be defined, in each of which every important variable is the same. For the present, the following plan is the best we have been able to devise to deal with the number of cases under consideration. Following a careful study of the cardiovascular system as a whole, a numerical value is assigned to various factors which have a bearing on prognosis. These are summarized in Table 6. The numerical values for each factor present are totaled, and this gives the numerical grade for the patient. Two examples of how to determine the numerical grade are given in Table 7. If the numerical grade is less than 4, the patient will be in Group 1 or 2. If the numerical grade is 4 or more, the patient will be in Group 3 or 4. The additional factors which determine the exact group of the patient are given in Table 8.

TABLE 7.—*Two Examples of Method for Determining Numerical Grade of Hypertensive Patients*

Factors Considered	Numerical Value
Example 1	
Abnormal ECG	1
Cerebrovascular accident without residual	1
P. S. P.* 20% in 15 min.	1
Total	3 = Numerical grade
Example 2	
Abnormal ECG	1
Enlarged heart	1
P. S. P.* 10% in 15 min.	3
Total	5 = Numerical grade

* Phenolsulfonphthalein.

TABLE 8.—*Classification of Hypertensive Patients*

Group	Numerical Grade	Criteria for Grouping: Other Factors
1	Less than 4	Eyegrounds Grade 0 or 1 No changes in cerebral, cardiac, or renal areas
2	Less than 4	Eyegrounds Grade 0 or 1, with changes in cerebral, cardiac, and/or renal areas; eyegrounds Grade 2, 3, or 4, with or without changes in cerebral, cardiac, or renal areas
3	4 or more	Resting diastolic level below 140 mm.; changes are present in cerebral, cardiac, and/or renal areas, but they do not include the following: (a) Cerebrovascular accident with marked residual (b) Frank congestive failure (c) P. S. P.* below 15% in 15 min., associated with a poor response to sedation
4	4 or more	Resting diastolic blood pressure below 140 mm. combined with one or more of the following: (a) Cerebrovascular accident with marked residual (b) Frank congestive failure (c) P. S. P.* below 15% in 15 min. combined with a poor response to sedation Patients with a resting diastolic level of 140 mm. or more

* Phenolsulfonphthalein.

The eyegrounds are graded according to the criteria of Keith, Wagener, and Barker. The lowest reading of diastolic pressure during the sedative test is taken to be the response to sedation. Three grains (180 mg.) of amobarbital (amytal®) sodium are given by mouth at 7, 8, and again at 9 p. m. Readings of blood pressure are taken every hour from 7 p. m. to 7 a. m. To be regarded as satisfactory, the diastolic level during the sedative test should fall to 90 mm. or less in patients with resting levels between 100 and 119 mm. For patients with resting levels between 120 and 139, the response to sedation should be a fall to 100 mm. or less. For those with resting levels of 140 mm. or more, the diastolic level should fall to 110 mm. or less. Otherwise the response to sedation is regarded as unsatisfactory.

The mortality rates for the control series are compared with those of the operated series in Table 8. A study of this table indicates that, with the exception of the cases in Group 1, the mortality rates for the surgical cases have been reduced significantly. The cases in Group 1 have persistently elevated blood pressure, with minimal or no eyeground changes and no abnormalities in the cerebral, cardiac, or renal areas. Those in the other groups have increasing amounts of cardiovascular disease. These same data are presented in the form of survival curves in Figure 2.

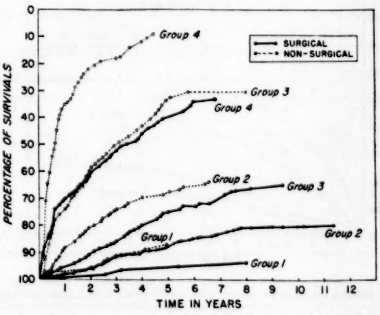

Fig. 2.—Survival curves for surgically and nonsurgically treated hypertensive patients grouped according to Smithwick criteria.

COMMENT

If patients are classified in four groups according to the criteria of Keith, Wagener, and Barker, the findings indicate that the mortality rates have been significantly lowered in all groups following thoracolumbar splanchnicectomy (Table 3, Figure 1). Previously, Woods and Peet [9] had shown this to be true for Group 4 cases.

If patients are arranged in a different fashion into various groups according to the amount of cardiovascular damage in the cerebral, retinal, cardiac, and renal areas, it appears that life expectancy has been improved, as indicated by the findings of Hammarström and Bechgaard (Table 5).

9. Woods, W. W., and Peet, M. M.: The Surgical Treatment of Hypertension: Comparison of Mortality Following Operation with That of the Wagener-Keith Medically Treated Control Series: A Study of 76 Cases from 5 to 7 Years After Operation, J. A. M. A. **117**:1508 (Nov. 1) 1941.

V 14
1951

More recently, White and others,[10] indicated that the prognosis for a small group of 50 patients with the severer cardiovascular changes was much improved after thoracolumbar splanchnicectomy, in comparison to that of a control series of 50 patients with comparable changes who had not been operated on.

If patients are arranged into four groups according to my criteria, outlined in Tables 6, 7, and 8, it is clear that the prognosis for cases in Groups 2, 3, and 4 has been significantly improved by thoracolumbar splanchnicectomy (Table 4, Figure 2). These patients had cardiovascular changes ranging from slight to severe. To date, while the mortality rate is lower for Group 1 cases treated surgically than for the control series, the difference has not as yet become statistically significant. It is expected that it will become so with a longer period of observation. Severe kidney damage, as indicated by persistent evidence of nitrogen retention, is the one finding which positively contraindicates splanchnicectomy in the more advanced stages of cardiovascular disease. The great majority of the patients treated surgically, as well as the controls, were middle-aged. Approximately 90% were under 50, and 80% were between 20 and 49 years of age.

The findings which have been presented indicate quite clearly that the prognosis for patients with hypertensive cardiovascular disease significantly improves after thoracolumbar splanchnicectomy. To date, the best results, when judged both by their significance in comparison to control cases as well as by the eventual mortality rates, have been obtained in cases falling into Groups 2 and 3 (my classification). Surgery may be employed in Group 4 cases, but because the eventual mortality rate is still very high in spite of thoracolumbar splanchnicectomy, it would seem much wiser to utilize surgical therapy earlier in the disease if it is to be considered at all. With regard to Group 1 cases, which are those having persistently elevated blood pressures without changes in the cerebral, cardiac, or renal areas, and with normal eyegrounds or with Grade 1 changes at most, surgery cannot as yet be advocated on a statistical basis. The less the cardiovascular damage, the better the prognosis with or without treatment. Reference to Table 4 will indicate that one-half of the Group 1 patients were operated on, and one-half were not. A longer period of observation will tell whether surgery should be seriously considered in such patients. In the meantime, surgery is utilized in Group 1 patients who are not doing well on medical therapy, or who for one reason or another cannot follow a medical regimen. Surgery is also given serious consideration in Group 1 patients who are young and have high resting diastolic levels, 110 mm. or more. In any case, they should be followed closely for evidence of the development of cardiovascular disease.

SUMMARY

The evidence available at present indicates quite clearly that the prognosis for patients with hypertensive cardiovascular disease ranging from slight to marked is significantly improved by thoracolumbar splanchnicectomy.

The patients who have derived the greatest benefit are those who fall into Groups 2 and 3 (my classification).

The effect of surgical treatment on prognosis affords the only reliable basis so far developed for the selection of cases for splanchnicectomy.

The survival curves for patients after they have had thoracolumbar splanchnicectomy should be useful in judging the relative merits of different forms of therapy in consecutive cases having varying amounts of cardiovascular disease when first seen.

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10. White, P. D.; Dimond, E. G., and Williams, A.: A Follow-Up Study of 100 Private Hypertensive Patients with Cardiovascular Complications, J. A. M. A. 143: 1311 (Aug. 12) 1950.

PHYSIOLOGY OF GASTRIC SECRETION AND ITS RELATION TO THE ULCER PROBLEM

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An excessive secretion of gastric juice, both in the fasting stomach and in response to the ingestion of food, has been found to be present in most, if not all, patients with duodenal and gastrojejunal ulcers, when appropriate methods for its detection have been employed. Observations on patients with peptic ulcer who have been treated by complete gastric vagotomy, supported and amplified by studies on experimental animals, indicate that this hypersecretion is the cause of the ulcers, is the chief factor which prevents them from healing, and that it is predominantly, if not exclusively, of nervous origin.

Hypertonicity and hypermotility of the stomach are likewise usually present in patients with duodenal and gastrojejunal ulcers, and are also of nervous origin. While there is no doubt that this hypertonicity and hypermotility contribute to the epigastric discomfort of these patients, they are probably of minor importance in the cause of ulcer or in determining chronicity.

In describing the mechanism of gastric secretion, physiologists have referred to the nervous or cephalic, the gastric, and the intestinal phases of secretion.[1] These

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1. Babkin, B. P.: Secretory Mechanism of the Digestive Glands, Ed. 2, New York, Harper & Brothers, 1950.

terms refer to the fact that secretion by the gastric glands in the body and fundus of the stomach may be stimulated by impulses in the vagus nerves aroused reflexly by the sight, odor, or taste of food, and also by the presence of food in the stomach or intestines. In a recent experimental analysis of the relative importance of these three phases of secretion, my associates and I [2] have found that in normal dogs the nervous phase of secretion accounts for approximately 45% of the gastric juice secreted in a 24-hour period, the gastric phase about 45%, and the intestinal phase 10% or less. These estimates are not precise, since there appears to be a definite inter-relationship, at least between the nervous and gastric phases of secretion. Thus, removal of the nervous phase of secretion by complete vagotomy likewise materially reduces the gastric phase of secretion, and elimination of the gastric phase of secretion in turn reduces the effectiveness of the nervous phase. The gastric phase of secretion was found to be mediated exclusively by the mucous membrane of the antrum of the stomach, which functions as an endocrine organ for the manufacture of the gastric secretory stimulant, gastrin, when it comes in contact with food or when the antrum is moderately distended. Removal of the antrum in Pavlov pouch dogs [3] or transplantation of the antrum to the abdominal wall so that it does not come in contact with food abolishes the gastric phase of secretion. When both the nervous phase of secretion and the gastric phase are eliminated, as by complete vagotomy and removal of the antrum, secretion of gastric juice by the body and fundus of the stomach is reduced to a negligible amount, indicating that the intestinal phase of secretion is relatively unimportant.

The early gastroenterologists were aware of the fact that the acidity of the gastric content following an Ewald test breakfast in duodenal ulcer patients is usually higher than that in normal persons, and they sometimes erroneously ascribed this to hyperacidity of the gastric juice itself. Many recent studies have confirmed the older view of Pavlov, that gastric juice, both in normal persons and in ulcer patients as well, is secreted at a constant acidity when the electrolyte composition of the blood is normal. Variations in the acidity of the gastric content for the most part depend on variations in the relative amounts of gastric juice and such neutralizing substances as swallowed saliva, food, mucus from the pyloric antrum, and regurgitated alkaline duodenal juices. Hypersecretion, rather than hyperacidity, of the gastric juice is thus the factor that raises the concentration of free hydrochloric acid in the gastric content of ulcer patients.

METHODS FOR STUDYING GASTRIC SECRETION

Quantitative methods for studying the secretion of gastric juice are usually necessary to demonstrate this abnormal gastric secretion, and for this reason should replace determinations of the free acid concentration in fractional samples of the gastric content, which give little or no information concerning the actual amount of hydrochloric acid manufactured by the stomach. It is likely that this deficiency in the usual procedures for gastric analyses is responsible for the low repute of this clinical test and has caused some experienced physicians to abandon it as of little value. If, however, quantitative methods of collection are applied, data obtained from gastric analyses are of definite value in the diagnosis of duodenal ulcers and, more especially, in forecasting the success of medical management and the eventual necessity of surgical treatment. Thus, we have recently seen two patients who secreted 330 and 337 mEq. of HCl in the 12-hour night period, as compared with 18 mEq., the normal average. It is very probable that this large secretion of acid could not be controlled by any type of medical management the patients could long tolerate, and that surgical measures to reduce the secretion would become inevitable.

The most convenient and satisfactory method that we have found for studying the continuous or fasting secretion of gastric juice in patients has been its recovery by continuous aspiration of an intranasal gastric tube. In employing this procedure it is our custom [4] to place the tube under fluoroscopic control in the lower portion of the stomach and to maintain constant suction with the Wangensteen apparatus from 9 o'clock in the evening until 9 the next morning. During this 12-hour period the patient is shielded from the sight and the odor or taste of food, and since all food has been removed from the stomach by a preliminary gastric lavage as well as by the period of fasting, the usual physiological stimuli for gastric secretion are absent. Some gastric secretion, of course, escapes through the pylorus, and many tests are worthless because of incomplete samples due to plugging of the tube with mucus or because of other accidents. The sample of gastric juice obtained is thus always minimum, and when hypermotility of the stomach is present, as occurs during the insulin test, the amount recovered may be so small as compared with the total amount secreted as to render the determination of little value. The volume and free hydrochloric acid of the night secretion are then measured, and if the volume of secretion is expressed in liters, and the free acid concentration in clinical units, the product of the two represents the free acid present in terms of milliequivalents.

This quantitative method for studying the continuous or fasting secretion may also be employed to determine the secretory response of the stomach to such stimuli as histamine and insulin hypoglycemia. These tests are conveniently performed in the morning when the intragastric tube is still in place following collection of the night secretion. One milligram of histamine acid phosphate is given subcutaneously, and the gastric secretion collected by continuous aspiration for a period of 60 minutes. The product of the volume of juice by the free acid concentration represents the acid output in response to a standard dose of histamine A similar technique may be employed to determine the gastric secretory response to insulin hypoglycemia, in which case it has been our custom to employ an intravenous injection of 20 units of regular insulin and a two-hour period of collection with determinations of the blood sugar to ascertain the degree of hypoglycemia produced.

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V 14
1951

With the quantitative method of measuring gastric secretion, one of us (L. R. D.) and Owens reported in 1943[5] that a hypersecretion of gastric juice occurred in the fasting stomach of duodenal ulcer patients, and that this was reduced below the levels found in normal persons by complete division of the vagus nerves to the stomach. Many subsequent studies, both in our own laboratories and elsewhere, have confirmed these early observations. Thus 81 normal persons, or surgical patients without gastrointestinal disease, were found to secrete an average of 18 mEq. of HCl in the 12-hour night secretion, whereas when tested by the same method, 135 duodenal ulcer patients secreted 60 mEq., or almost four times as much. Following complete vagotomy in 70 of these patients, the output of hydrochloric acid was reduced to 11 mEq., or considerably less than that put out by the normal person.

THE NERVOUS PHASE OF GASTRIC SECRETION

Welin and Frisk, in 1936,[6] demonstrated that the gastric glands in duodenal ulcer patients respond to hypoglycemia produced by a standard dose of insulin by a greater output of hydrochloric acid than occurs in normal persons. This was confirmed by Ihre in 1939,[7] and recently by Winkelstein,[8] and in our own laboratories. Duodenal ulcer patients also display an exaggerated gastric secretory response to a standard dose of histamine. Thus, two of us (L. R. D. and H. A. O.)[9] found that 18 normal males secreted an average of 13.2 mEq. of HCl in a period of 60 minutes after the subcutaneous injection of 1 mg. of histamine. In contrast to this, a group of 15 males with peptic ulcer put out 27 mEq. of HCl, or almost twice as much as the normal person, in response to the same dose of histamine. Complete vagotomy abolishes the gastric secretory response to insulin hypoglycemia, indicating that this form of stimulation is entirely central. It is interesting in this connection that complete vagotomy also markedly decreases the gastric secretory response to a standard dose of histamine. Thus, the group of ulcer patients described above, who secreted an average of 27 mEq. of HCl in response to a standard dose of histamine, put out an average of only 5.5 mEq. of free HCl after division of the vagus nerves to the stomach. This demonstration that complete vagotomy reduces the gastric secretory response to a humoral stimulant of gastric secretion suggests that the secretory response to the humoral agent or agents released by the ingestion of food is likewise reduced. This conclusion is supported by the frequent finding of almost complete absence of free HCl in the gastric content of vagotomized patients for a prolonged period after the ingestion of food.

Although work on the lower animals has demonstrated that the nervous phase of gastric secretion is mediated exclusively by the vagus nerves and can be abolished completely when the vagus fibers are divided, it is not yet possible to eliminate the nervous phase of secretion in all patients by surgical methods currently employed. This failure to secure a complete or near-complete vagotomy in all patients is the chief defect in this operative procedure. It is almost certainly due to the technical inability of the surgeon to find and divide all of the vagus nerves to the stomach and is very largely overcome as the surgeon acquires increasing experience and the conviction that all fibres must be sought out and divided. Meticulous denervation of the lower 3 in. of the esophagus by a transabdominal, transdiaphragmatic operation has thus far proved to be the most successful method in our experience. The data summarized in Table 1 present our total experience to date on the efficacy of this procedure in producing a complete vagotomy as evidenced by a negative gastric secretory response to insulin hypoglycemia. In 470 duodenal ulcer patients subjected to vagotomy, the insulin test, when performed 10 days after the operation, gave a positive response in 10% of the patients. This represents a minimum figure since some patients fail to respond to insulin hypoglycemia immediately after surgery because of trauma to the vagus nerves, and when tested three to six months later give a positive response. In 81 patients in whom the insulin test was performed one year following the operation, 28% yielded a positive response, indicating preservation of some vagus innervation to the stomach. A similar high percentage of positive insulin tests was obtained in smaller groups of patients examined two, three, four, and five years after the operation. These data are, of course, significant only with respect to the particular group of patients examined and not to the group as a whole. Dis-

TABLE 1.—*Early and Late Effect of Vagotomy on Gastric Secretory Response to Insulin Hypoglycemia in Duodenal Ulcer Patients*

Time of Test After Vagotomy	Number of Patients Tested	Patients with Positive Response	Patients with Equivocal Response	Patients with Negative Response	Per Cent Positive
10 days	470	47	35	388	10
1 yr.	81	23	12	46	28
2 yr.	55	17	4	34	31
3 yr.	66	18	5	43	27
4 yr.	33	11	3	19	33
5 yr.	15	8	1	6	53

satisfaction with the operation has been largely due to incomplete vagotomy, and since patients who have failed to secure a perfect result are easier to bring back to the hospital for subsequent examination and secretory studies, an element of selection necessarily exists.

While a positive response to insulin hypoglycemia, in our opinion, indicates the presence of intact vagus secretory fibers to the stomach, such a positive test does not by any means indicate that the nervous phase of secretion has not been eliminated. The best evidence that we have in support of this statement has been obtained on experimental animals. We have several times observed Pavlov pouch dogs who gave a positive response to insulin hypoglycemia, thus indicating the presence of some vagus innervation to the isolated stomach pouch. How-

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8. Winkelstein, A., and Hess, M.: Effect of Insulin Hypoglycemia on Gastric Secretion in Duodenal Ulcer and Controls, Gastroenterology **11**: 326, 1948.

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ever, when the vagus nerves were subsequently divided in the chest and the secretory response to insulin hypoglycemia abolished, the total output of gastric juice from the isolated stomach was not reduced. We have taken this to indicate that insulin hypoglycemia is a more potent stimulus to the gastric secretory fibers in the vagus than

TABLE 2.—*Early and Late Effect of Vagotomy on Fasting Nocturnal Gastric Secretion in Duodenal Ulcer Patients*

Time of Test After Vagotomy	Number of Patients Tested	Average 12-Hour Output of Free HCl in mEq.		Per Cent Reduction in HCl Output
		Before Vagotomy	After Vagotomy	
10 days	309	63	5	87
1 yr.	37	75	14	79
2 yr.	30	79	9	89
3 yr.	37	74	7	91
4 yr.	21	74	11	84
5 yr.	10	65	3	97
6 yr.	4	89	2	98
7 yr.	1	102	16	84

is the sight, odor, or taste of food, and that when a meagre vagus innervation is present, a secretory response is obtained only to the stronger stimulus. Support for this conclusion is obtained from the data summarized in Table 2. This shows that the amount of hydrochloric acid secreted in the 12-hour nocturnal gastric secretion was reduced from 79 to 98% of the preoperative level, and this reduction was just as marked in the patients examined after two, three, four, five, six, and seven years as it was 10 days after the operation.

ULCER RECURRENCE AND NIGHT GASTRIC SECRETION

Abolition of the excessive night secretion of gastric juice is the most important alteration in the physiology of the stomach produced by vagotomy in duodenal ulcer patients, both from the standpoint of predicting healing of the lesion and the prevention of recurrence. The data summarized in Table 3 show that there is a definite relation between the degree of reduction in the nocturnal gastric secretion after vagotomy and the response to the insulin test. In a series of 307 patients where both preoperative and postoperative night secretion was carefully

TABLE 3.—*Relation of Reduction in Nocturnal Gastric Secretion in Duodenal Ulcer Patients After Vagotomy to the Secretory Response to Insulin Hypoglycemia*

Per Cent Reduction in HCl Output in 12-Hr. Night Secretion as Compared with Preoperative Levels	Number of Patients	Patients with Positive Insulin Tests	
		No.	%
0- 20	11	4	36
20- 40	6	2	33
40- 60	13	3	23
60- 80	33	5	15
80-100	95	7	7
100 (No free acid)	149	7	4.7
Total	307	28	9

determined and the insulin test performed, 30 patients secured a reduction in the free acid output of 60% or less. The distribution is indicated in the table. Thirty per cent of these patients displayed a positive insulin test following the operation. The remaining 277 patients secured a reduction in the night secretion ranging between 60% and 100%, or complete anacidity. In this group, 19, or only 7% of the total, showed a positive insulin test.

The relation of recurrence of ulcer to reduction in the nocturnal gastric secretion and the insulin test after vagotomy for duodenal ulcer is summarized in Table 4. It is quite clear that patients with a negative insulin test and a marked reduction in the output of free hydrochloric acid in the night secretion have the best chance of securing healing of the lesion following vagotomy and in remaining free of subsequent recurrence. Of a total of 516 patients in whom vagotomy was performed for duodenal ulcer in this clinic between 1943 and 1950, there developed in 34, or 6.6%, a recurrent duodenal or a stomal ulcer following the operation. Table 4 presents an analysis of 111 patients from this group in which pre- and postoperative secretory studies were complete. There was a higher incidence of recurrent ulcers in this group (17%) than in the series as a whole, largely because it is easier to get patients who have had an unsatisfactory result to return to the hospital for further study than patients who have remained entirely well. Five patients secured a reduction in the output of hydrochloric acid in the nocturnal gastric secretion of less than 20%. In all five of these recurrent ulcers developed, and in four of them the vagotomy was incomplete, as evidenced by

TABLE 4.—*Relation of Recurrence of Ulcer to Reduction in Nocturnal Gastric Secretion After Vagotomy for Duodenal Ulcer in a Selected Series of Patients**

Per Cent Reduction in HCl Output in 12-Hr. Night Secretion	Number of Patients	Recurrent Ulcers	Positive Response to Insulin Hypoglycemia
0- 20	5	5	4
20- 40	1	0	0
40- 60	3	0	2
60- 80	15	6	9
80-100	23	2	6
100 (No free acid)	62	4	14

* These data were obtained from 111 patients with duodenal ulcers in whom pre- and postoperative secretory studies were complete. There was a higher incidence of recurrence of ulcers in this group (17%) than in the series as a whole (6.6%).

a positive response to insulin hypoglycemia. Eighty-five of the group secured a reduction in the output of free hydrochloric acid in the nocturnal secretion of 80% or greater, and of these, in six recurrent ulcers developed, and 20 had an incomplete vagotomy, as evidenced by the insulin test. In 28 patients with recurrent ulcer, the insulin test of gastric secretion was positive in 8 patients, equivocal in 5, and negative in 15, when performed 10 days after the vagotomy. In 25 patients with recurrent ulcer the insulin test of gastric secretion was positive in 22, equivocal in 2, and negative in only 1, when the test was performed one to seven years after the operation.

HYPERSECRETION OF GASTRIC JUICE AS A CAUSE OF DUODENAL ULCER

In an examination of the theory that ulcers are due to the corrosive and digestive properties of the gastric content, at least two factors call for consideration, namely, the resistance of the mucous membrane and the intensity of the chemical irritation by the gastric content. The corrosive properties of the gastric content for the most part are due to the hydrochloric acid and pepsin of the gastric juice and are markedly increased when hypersecretion is present. Food, mucus, and regurgitated duodenal content must be regarded as protective or buffering material. The observation, repeatedly con-

V 14
1951

firmed, that gastric secretion, and hence the corrosive properties of the gastric content in patients with gastric ulcer, are within normal limits, indicates that the important cause of these lesions must be a local decrease in the resistance of the gastric wall to peptic digestion. This decrease in resistance may in turn be due to thrombosis or embolism of the gastric arteries, as called for in the theory of Virchow and Hauser. We have encountered three cases in which such thrombosis was found.

Hypersecretion of gastric juice is regularly found in patients with duodenal ulcer. The corrosive properties of the gastric content in these patients are greater than normal so that it is necessary to raise the question: can a simple increase in the corrosive properties of the gastric content produce an ulcer without local decrease in resistance of the gastric or duodenal wall? Data from the experimental laboratory indicate that the mucous membrane of the stomach, duodenum, esophagus, or jejunum will succumb to the digestant action of pure gastric juice or to a gastric content consisting predominantly of gastric juice.[10] Although it is probable that a similar result would occur in man, it is not possible at the present to state that spontaneously occurring duodenal ulcers are due exclusively to the increased corrosive properties of the gastric content rather than to a combination of this factor and a local decrease in resistance which might at least determine the site and size of the ulcer. Less difficulty arises in analyzing the pathogenesis of gastrojejunal ulcer, where it is clear that exposure to the gastric content in the new location causes the disease. One important fact has come to light as a result of both clinical observation and animal experimentation, namely, that stoma ulcer occurs only when a hypersecretion of gastric juice exists. The secretion of gastric juice is within normal limits or depressed in patients with gastric ulcers or with carcinoma in the region of the pylorus. Gastrojejunal ulcers rarely or never occur following gastroenterostomy in these patients. Stoma ulcers rarely or never occur following gastroduodenostomy or gastrojejunostomy in normal dogs The complication is most commonly seen in man following gastroenterostomy, in patients with duodenal ulcer associated with marked hypersecretion. It occurs in dogs following gastroenterostomy or gastroduodenostomy if a hypersecretion of gastric juice is experimentally produced. This may be done by the implantation of histamine and beeswax into the subcutaneous tissues as demonstrated by Wangensteen and his associates [11] or by causing an experimental hyperfunction of the gastric antrum, a recent finding in our laboratory.[12]

In quantitative secretory studies on dogs with isolated Heidenhain pouches of the body and fundus of the stomach, it was found that transplantation of the antrum into the abdominal wall so that it could not come in contact with food markedly decreased or abolished the secretion of gastric juice from the isolated pouch. This secretion was subsequently returned to approximately the normal level when the antrum was reimplanted into the duodenum as a diverticulum. When, however, it was reimplanted into the colon, the secretion of gastric juice from the isolated pouch was increased to approximately twice the normal level, and this increase persisted until the antrum transplant into the colon was removed. When sustained hypersecretion of gastric juice due to hyperfunction was produced by this method, it was then found that stoma ulcers occurred in 80% of animals following gastrojejunostomy and in 20% of animals following gastroduodenostomy.

In 1927 Silbermann [13] produced a hypersecretion of nervous origin with ulcer formation in dogs by repeated sham feeding experiments in animals provided with a double esophagostomy. In 1935 I [14] reported that ulcers regularly develop in the totally isolated stomach of the dog if the vagus innervation to the stomach is carefully preserved. Since ulcers never occur in such preparations when the vagus nerves have been divided, these ulcers may be considered to be predominantly of nervous origin. With this experimental demonstration, that a hypersecretion of gastric juice with ulcer formation may result from exaggerated activity of either the nervous phase of secretion or the hormonal or antrum phase, it becomes of importance to determine whether the hypersecretion present in patients with duodenal ulcer is of nervous or antrum origin. Data alluded to previously in this paper which indicate that the hypersecretion of gastric juice in duodenal ulcer patients is abolished in up to 98% of instances by vagotomy provide strong support to the conclusion that this hypersecretion is usually of nervous origin. This is supported by the clinical observation made when gastrectomy was first introduced that simple removal of the gastric antrum was not sufficient to prevent a high incidence of subsequent stoma ulcers, and more extensive resections came into vogue. The fact, however, that antrum hyperfunction with hypersecretion can be produced in experimental animals, and that this hypersecretion may cause typical progressive ulcers in a large percentage of cases, makes it necessary to scrutinize patients with this possibility in mind.

The exaggerated gastric secretory response of duodenal ulcer patients to both humoral and nervous stimulation indicates that the gastric glands or the local neuroglandular complexes of these patients are hyperirritable or hypersensitive to normal physiological stimuli. Is this peripheral hypersensitivity the fundamental secretory abnormality that must be corrected, or is the disease of central nervous origin? The observation that vagotomy markedly reduces the gastric secretory response of dogs as well as ulcer patients to a standard dose of histamine suggests that the sensitivity of the gastric glands is normally due to the tonic effect of the vagus and that this sensitivity is excessive in ulcer patients because of a hypertonus in these nerves.

Recognition of the exaggerated gastric secretory response of duodenal ulcer patients to both humoral and nervous stimulation is recent, and has not received extensive study. Presumably, this heightened response indicates that the gastric glands or the local neuroglandular complexes in these patients are hypersensitive or hyper-

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irritable. The observation [9] that vagotomy markedly reduces the gastric secretory responses of total pouch dogs to a standard dose of histamine suggests that the sensitivity of the gastric glands is normally dependent on the tonic effect of secretory fibers in the vagus nerves. This sensitivity may be excessive in ulcer patients because of hypertonus in these nerves or there may be a continued bombardment of the gastric glands by secretory nerve impulses. The increased incidence of duodenal ulcer in persons whose occupations subject them to nervous tension and strain and the exacerbation of ulcer symptoms under such conditions have led to the characterization of this disease as of psychosomatic origin. Proof of this contention is difficult to obtain. It is attractive to speculate that in some way the tensions and emotions of competitive effort arouse a hypertonus in the vagus secretory mechanism, and that it is in this way that the central nervous system plays a role in the disease. The possibilities of artifically induced tension states in aggravating the disease and of psychotherapy in alleviating it ought to be reexplored, using quantitative studies on the fasting gastric secretion as an objective criterion.

SUMMARY

The nervous or cephalic phase of gastric secretion is mediated by the vagus nerves, and is permanently abolished by complete vagotomy. The gastric phase of secretion is mediated by the antrum of the stomach which functions as an endocrine organ for the manufacture of the gastric secretory excitant, gastrin. The gastric phase is eliminated by complete removal of the antrum or by transplanting the antrum to the abdominal wall so that it does not come in contact with food. In normal animals the nervous phase of secretion accounts for about 45% of the gastric acid produced in a 24-hour period, the gastric or antrum phase about 45%, and the intestinal phase 10% or less. When the nervous and gastric phases of secretion are eliminated by vagotomy and antrum resection, the secretion of acid by the body and fundus of the stomach is reduced to a negligible amount. In experimental animals a hypersecretion of gastric juice of nervous origin with ulcer formation can be produced in vagus-innervated total-pouch dogs by draining the gastric secretion to the exterior instead of into the intestinal tract. A similar hypersecretion with ulcer formation but due to hyperfunction of the gastric antrum may be produced in experimental animals by transplanting the antrum into the colon. A hypersecretion of gastric juice is regularly found in patients with duodenal and gastrojejunal ulcers. This hypersecretion is usually of nervous origin and may be reduced to normal or subnormal levels in 97% of patients by an adequate transabdominal supradiaphragmatic section of the vagus nerves. Removal of the gastric phase of secretion in duodenal ulcer patients by resection of the antrum is not regularly followed by a marked reduction in secretion and the high incidence of stoma ulcer following this procedure is further evidence that the hypersecretion is not of antrum or humoral origin. Failure to secure healing of the ulcer or recurrence in our experience has been almost always associated with an incomplete vagotomy, as revealed by repeated positive insulin tests six months or later after the operation, and persistence of the nocturnal hypersecretion. The percentage of incomplete vagotomies steadily decreases as the surgeon gains experience, but is not eliminated by present techniques, and this constitutes the chief weakness in this method of surgical therapy.

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V 14
1951

CLINICAL EVALUATION OF METHANTHELINE (BANTHINE®) BROMIDE IN GASTROENTEROLOGY

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Clinical evaluation of any new drug is hazardous. This invariably is true when the drug is used to influence the physiology of the gastrointestinal tract, where an early affirmation of efficacy frequently is negated by extensive and competent trial. Time and astute observation by critical clinicians establish the status of a therapeutic agent, confirming or denying those claims—chemical, physical, and physiological—which emanate from the laboratories. In the final analysis, it is the clinician who establishes the virtues of a product whose potentialities have been endorsed by the research departments.

Methantheline (banthine®) bromide, introduced as a remedy for peptic ulcer,[1] after being received with premature enthusiasm, encountered rigid conservatism during its probationary period. No truly disparaging reports on this new anticholinergic have been recorded. From a period of adequate and critical evaluation methantheline bromide emerges as an adjunct to ulcer management and is alleged to influence many gastrointestinal functions.[2] It has inspired extensive laboratory and clinical investigations, stimulating a keener professional insight and therapeutic approach to the physiology of gastrointestinal function.

From the Browne-McHardy Clinic.
Aided by a grant from the Medical Group Research Fund.
Methantheline (banthine®) bromide was generously supplied by Irwin C. Winter, M.D., Clinical Research Division, G. D. Searle & Company, Chicago, and bentyl® hydrochloride was generously supplied by Raymond C. Pogge, M.D., Clinical Research Division, William S. Merrell Company, Cincinnati.
Read before the Section on Gastro-Enterology and Proctology at the One Hundredth Annual Session of the American Medical Association, Atlantic City, June 13, 1951.

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This anticholinergic, a quaternary ammonium salt (beta-diethylaminoethyl xanthene-9-carboxylate-methobromide) has dual effectiveness; it inhibits acetylcholine liberated at the postganglionic parasympathetic nerve endings and it blocks acetylcholine transmission through autonomic ganglia. Hambourger [3] and his associates, emphasizing these manifold activities of methantheline, indicated the potentialities of curariform effect. Winter [4] has postulated interference with afferent sensory impulses.

An extensive bibliography substantiates the potency of methantheline on physiology of the gastrointestinal tract. From our observations a practical clinical evaluation of methantheline in relation to secretion, motility, healing, and pain relief has been made. As far as was possible, all of our studies were controlled with atropine, bentyl® hydrochloride (beta-diethylaminoethyl 1-cyclohexylcyclohexanecarboxylate hydrochloride), and placebos. Although we appreciate the objective influence of placebos that was demonstrated by Wolf, we nevertheless feel justified in their inclusion in such studies.

SECRETION

Although knowledge of methantheline's influence on secretory function is incomplete, certain observations are conclusive, confirmed, and acceptable. Salivation is uniformly inhibited. The inhibition was definite in 86% of 200 patients studied, and was directly related to sensitivity of the patient and dosage of the drug. This effect is transient. Tolerance to the drug often is acquired within 72 hours. Ten normal fasting men had an average forced expectorable oral salivation of 32 cc. in an hour. Thirty minutes after administration of 100 mg. of methantheline (parenteral) they were able to produce only 4 cc. of saliva in an hour. After these patients were on methantheline therapy for 72 hours, salivation averaged 16 cc. in an hour. Although this effect is of interest, it is significant in proof of action and amelioration. Haloubek [5] has stressed its aid to the oral surgeon. After seven days of therapy with the drug, there was no demonstrable inhibition of saliva. In 10 cases of infectious parotitis there was comparable salivary depression without influence on the course of the disease. In all cases the salivary secretions remained acid. Bentyl® (50 mg.) showed an appreciable salivary inhibition in only 22% of patients.

Esophageal intubation in five instances of neoplastic esophageal obstruction and in five of obstructive cardiospasm revealed an insignificant diminution in both series from a 24-hour average suction of 326 cc. of saliva during the control period when no drug was given to 275 cc. when methantheline was given in 100 mg. amounts parenterally every four hours. In this study abstinence from swallowing saliva was exacted. The secretions were alkaline throughout. This limited observation apparently confirmed an anticipated absence of methantheline's influence on esophageal secretion. Atropine and bentyl® likewise exerted no obvious esophageal influence.

Gastric secretory studies though voluminous are inconclusive. Hormone, uropepsin, and lysozyme influence have not been established. To a variable degree the ganglionic blocking action of methantheline controls the volume of gastric secretion apparently more uniformly than it controls acid production. The claims of inhibition of gastric secretion in volume, titratable acidity, and nocturnal secretion, together with modifications of the secretory response to insulin hypoglycemia, have been modified. If vagal inhibition is achieved by methantheline, apparently either a secretory response may result from a vagal action other than cholinergic, or a dose adequate to cause full inhibition cannot be given. The latter seems unlikely in the presence of evidence of profound atropine-like effect in our studies.

Ten selected normal male students were used for controls because of their normal gastric secretory responses. Twelve-hour secretory studies with parenteral methantheline (100 mg. every four hours) showed a uniform and definite depression as to volume but slight effect on titratable free acid as illustrated.

A comparable study was done in 10 men, each with active acute duodenal ulcer (symptomatology of less than 12 months' duration). The secretory depressive effect was significant.

In 10 patients, each with active duodenal ulcer accompanied by marked nocturnal pain but no radiologic evidence of obstruction, there was inconstant but definite methantheline secretory depression. In explanation of inconsistency it is suggested that some persistent hypersecretors were more disturbed, remained awake, and obviously were highly emotional.

In a study of 10 cases we were unable by the use of parenteral methantheline to modify appreciably the secretory response to insulin hypoglycemia and to histamine stimulation in any way other than that of an insignificant diminution in volume.

In 10 selected chronic duodenal ulcer patients of the typical "intractable variety" the methantheline response

2. Footnote 1. (*a*) Plummer, K.; Burke, J. O., and Williams, J. P.: Clinical and Experimental Observations on the Effect of Banthine in Peptic Ulcer, and Chronic Ulcerative Colitis, South. M. J., to be published. (*b*) Winkelstein, A.: Banthine® in the Therapy of Peptic Ulcer, correspondence, J. A. M. A. **144**: 1501 (Dec. 23) 1950. (*c*) McHardy, G., and others: An Evaluation of Banthine in Ulcer Management, New Orleans M. & Surg. J. **103**: 380-386, 1951. (*d*) Longino, F. H.; Grimson, K. S.; Chittum, J. R., and Metcalf, B. H.: An Orally Effective Quaternary Amine, Banthine, Capable of Reducing Gastric Motility and Secretions, Gastroenterology **14**: 301, 1950. (*e*) Chapman, W. P.; French, A. B., and Hoffman, P. S.: Multiple Balloon Kymographic Recordings of the Comparative Action of Banthine, J. Clin. Invest. **29**: 6, 1950. (*f*) Golden, R.: Some Clinical Problems in Small Intestinal Physiology: Mackenzie Davidson Memorial Lecture, Brit. J. Radiol. **23**: 390, 1950. (*g*) Walters, R. L.; Morgan, J. A., and Beal, J. M.: Effects of β-Diethylaminoethyl Xanthene 9-Carboxylate Methobromide (Banthine) on Human Gastrointestinal Function, Proc. Soc. Exper. Biol. & Med. **74**: 526, 1950. (*h*) Benjamin, F. B.; Rosiere, C. E., and Grossman, M. I.: A Comparison of the Effectiveness of Banthine and Atropine in Depressing Gastric Acid Secretion in Man and the Dog, Gastroenterology **15**: 727, 1950. (*i*) Smith, C. A.; Woodward, E. R.; Janes, C. W., and Dragstedt, L. R.: The Effects of Banthine on Gastric Secretion in Man and Experimental Animals, Gastroenterology **15**: 718, 1950. (*j*) Shingleton, W. W.; Fawcett, B., and Vetter, J. S.: Pancreatic Secretion and Response to Secretion after Vagotomy and Sympathectomy, read before the Clinical Congress of the American College of Surgeons, Boston, Oct. 23-27, 1950. (*k*) Asher, L. M., and Cohen, S.: The Effect of Banthine on the Central Nervous System, Gastroenterology **17**: 178, 1951. (*l*) Kern, F., Jr.; Almy, T. P., and Stolk, N. J.: Experimental and Preliminary Study of the Effect of a New Quaternary Amine, Banthine, upon the Human Colon, Gastroenterology **17**: 198, 1951. (*m*) Asher, L. M.: Gastroscopic Observations on the Effect of Banthine on the Human Stomach, Gastroenterology, to be published. (*n*) Grimson, K. S.; Lyons, C. K.; Watkins, W. T., and Calloway, J. L.: Successful Treatment of Hyperhidrosis Using Banthine,® J. A. M. A. **143**: 1331 (Aug. 12) 1950. (*o*) Golden, A.: Personal communication to the author.

3. (*a*) Hambourger, W. E.; Cook, D. L.; Winbury, M. M., and Freese, H. B.: Pharmacology of Beta-Diethylaminoethyl Xanthene-9-Carboxylate Methobromide (Banthine) and Chloride, J. Pharmacol. & Exper. Therap. **99**: 245, 1950. (*b*) Hambourger, W. E.; Cook, D. L., and Green, D. M.: Antagonism of Cholinergic Trial by Beta-Diethylaminoethyl Xanthene-9-Carboxylate Methobromide (Banthine Bromide), Federation Proc. **9**: 281, 1950.

4. Winter, I. C.: Personal communication to the author.

5. Haloubek, J. E.: Personal communication to the author.

was surprisingly dramatic when compared with the acute duodenal ulcer series.

Comparable gastric ulcer patients were not available for such a complete survey. However, in 10 hyperchlorhydric benign gastric ulcer patients, studies were conducted for secretory inhibition with the charted favorable response.

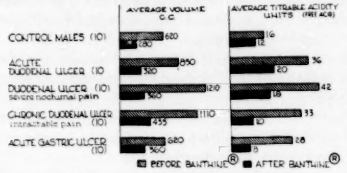

Chart 1.—Influence of methantheline (banthine®) bromide on gastric secretion during continuous suction for 12-hour periods during the night. Methantheline was given parenterally every four hours in doses of 100 mg.; during the control period placebo hypodermics were given every four hours.

In these gastric secretory studies, when 1/75 grain (about 0.8 mg.) of atropine and 50 mg. of bentyl* hydrochloride were used as equivalent to 100 mg. of methantheline, they were of approximate efficiency in volume secretory depression and without any influence on titratable acidity.

In 4 patients with duodenal and 3 with jejunal fistulas and 10 with a permanent ileostomy, a 24-hour quantitative study of excretion was made with the patient restricted to a 24-hour oral fluid intake of 2,500 cc.; methantheline, 100 mg. parenterally administered every four hours, did not appreciably alter fistula output. In the ileostomy patients there was an appreciable and constant influence in an average of 33%. Atropine in doses up to 1/75 grain showed no influence whatever. Bentyl* in

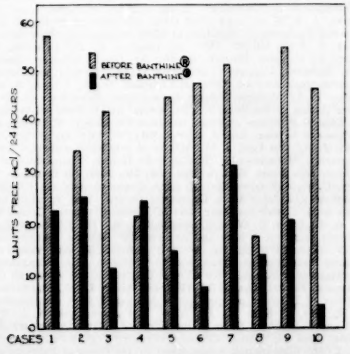

Chart 2.—Variable responses in nocturnal pain in duodenal ulcer patients.

50 mg. doses, like methantheline, was limited in its influence on ileostomy output, but it was of equivalent efficiency.

Two patients in whom pancreatic fistulas developed as a complication to a modified Whipple pancreatic resection, two in whom the same condition developed as a complication to a gastric resection, and one patient in whom this condition resulted from inadvertent surgery for acute pancreatitis were studied from a volumetric view. There was dramatic inhibition of fistulous drainage to an average of 60% during a 72-hour period of therapy with 100 mg. of methantheline parenterally administered every four hours. All patients recovered. In a single additional case there was no apparent benefit from methantheline. Neither atropine nor bentyl* could be credited with so definite an influence.

Four patients with choledochostomy drainage subsequent to cholecystectomy for choledocholithiasis showed an average increase in bile excretion to 240 cc. in 24 hours when 100 mg. of methantheline was administered every 4 hours. There was no similar effect from atropine or bentyl.* Choleretics were 40% more efficient. Atropine and bentyl* were ineffective. No adequate explanation for this action is available; however, influence on duodenal motility might be contributory.

There was an appreciable influence on colostomy output at different colon levels by methantheline, atropine, or bentyl.*

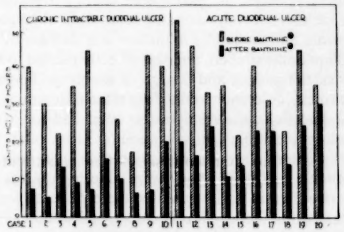
CHRONIC INTRACTABLE DUODENAL ULCER
ACUTE DUODENAL ULCER
BEFORE BANTHINE®
AFTER BANTHINE®
CASES 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Chart 3.—Responses in chronic intractable ulcer (Cases 1-10) and acute duodenal ulcer (Cases 11-20).

MOTILITY

Since contraction of the gastrointestinal tract is controlled by cholinergic nerves, methantheline would seem to be an established specific for any dysfunction related to hypertonicity. This theory is tangible but susceptible; motor responses to peripheral anticholinergics and to those acting on the ganglia vary.

As anticipated, the hypertonicity of esophageal spasm was accentuated. In 18% of 200 esophagograms on methantheline-managed duodenal ulcer patients a radiologically demonstrable degree of cardiospasm was encountered, in contrast with 3% in routine diagnostic surveys on these duodenal ulcer patients prior to methantheline therapy. This may partially explain the increase in pyrosis frequently encountered with the initiation of methantheline therapy. Patients with well-established cardiospasm become worse after administration of methantheline. Ten patients with cardiospasm who had easily passed a mercury-pneumatic dilator were refractory to the same bouginage after parenteral administration of 100 mg. of methantheline.

We did not employ gastrometric evaluation. Balloon-kymographic studies [6] have indicated effective inhibition of gastric contraction waves by methantheline. The radiographic evaluation has indicated that methantheline in-

6. Longino et al.[2d] Chapman et al.[2e]

V 14
1951

duces sluggish ineffective propulsive contractions with delayed barium emptying into the duodenum. Gastroscopic observations have confirmed the radiographic findings of cessation of peristalsis and atony of the gastric wall. Persistent emesis considered psychogenic was stopped for an average of three hours in 15 out of 23 trials. Golden [20] has indicated methantheline's efficiency in hyperemesis gravidarum.

Our radiologic observations were a "blind study" in that the examiner was not aware that certain patients had been given 100 mg. of methantheline intramuscularly 30 minutes prior to study. In a study of 10 normal patients used as controls, methantheline definitely retarded the emptying of the stomach in each instance. In seven patients sluggish, ineffective peristaltic waves and hypotonicity were noted. There was no specific comment on the remaining three examinations. Of 10 patients with uncomplicated acute duodenal ulcer, 8 showed hypotonicity, absence of previously described pylorospasm, and ineffective peristaltic activity. In all 10 patients the ulcer crater was more easily demonstrated than at the earlier examination. A comparative evaluation with atropine and bentyl* in 60 known ulcer patients showed that methantheline was definitely effective in 75% of cases for the demonstrable inhibition of gastric tonicity as compared with an effectiveness of 30% with atropine (1/75 grain) and 60% with bentyl* hydrochloride (50 mg.). There was no alteration in the ruga pattern in any instance of five severe hypertrophic gastritis patients with methantheline, bentyl,* or atropine.

When methantheline was given pregastroscopically in 20 patients, we uniformly encountered (as noted by Asher)[7] an atonic stomach easily distended without discomfort to the patients. Peristalsis, when present, was in weak waves, and the pylorus did not evert itself into the stomach, as it usually does, but appeared patent and tubular. The ruga pattern in hypertrophic gastritis was not influenced by methantheline. The gastroscopist was not aware that methantheline had been substituted for the atropine he routinely administered preoperatively, which had never been recorded as producing a similar effect. The definite evidence of influence on color or turgescence of the mucosa as photographed by Abbott and Wolf [8] was not present in our study.

Small bowel studies were difficult to interpret. Balloon manometric [2f, g] studies have indicated the efficiency of methantheline and the conclusion was drawn that the anticholinergic result is primarily a ganglionic effect of efficient prolonged action on the motility of the small intestine. In 7 patients with quiescent regional enteritis in whom hyperperistaltic diarrhea was the only active complaint and 10 patients with active regional enteritis, methantheline in 100 mg. doses parenterally administered every two hours did not alter the six-hour hypermotility of barium nor of gentian violet when the patient was free of barium. The radiologist did not offer any descriptive alteration over previous studies. In 10 normal control patients there was no alteration in mucosal pattern other than a suggestion of widening in 3, but there was a definite hypomotility of barium and gentian violet with a prolongation of transit time by an average of 3 hours and 22 minutes. In 17 cases of regional enteritis we have not encountered any beneficial effect from methantheline. In 10 cases of assumed hyperperistaltic diarrhea, in which the barium transit time to the ileocecal valve was less than 90 minutes, an appreciable hypomotility was achieved with methantheline, prolonging the transit time to an average of 256 minutes and ameliorating the diarrhea from an average of 12 stools to 4 stools per 24 hours.

Inaccuracy is obvious in the estimation of colonic function. Data from animal experimentation is rarely applicable to the human subject. The colostomized patient is hardly a candidate for valid experimentation. Kern [21] and his associates give impressive conclusions from balloon kymography in sigmoid studies on the intact human subject. In comparative evaluation, they indicate methantheline's antispasmodic efficiency in drug and food induced sigmoid hyperactivity. It was hypothesized that methantheline-resistant, emotionally precipitated spasm was related to stimulation by extrinsic cholinergic nerves ending within the substance of the effector cell and thereby escaping methantheline's anticholinergic influence, which is an inhibition of acetylcholine entering the cell.

In 20 selected patients in whom bowel habit regulation was a fixed pattern of postcoffee morning defecation we abolished this gastrocolic reflex to defecation in every instance with administration of 100 mg. of methantheline orally 30 minutes prior to coffee ingestion. This consistent effect seems to confirm the abolition by methantheline of gastrocolic reflex observed by Kern [21] and his associates.

Actual colon disease entities in our observation were not influenced by methantheline. Diarrhea concomitant to neoplasm in 18 patients (cecum, three; ascending colon, one; transverse colon, one; descending colon, three; sigmoid, four; rectosigmoid, six) was not altered. The hypermotility diarrhea of the various forms of chronic ulcerative colitis was not influenced in 60 cases studied (amebiasis, 36; idiopathic chronic ulcerative colitis, 18; tuberculous cecitis, 2; lymphopathia venereum, 4.)

In the severe irritable colon syndrome (20 patients) in which both hypersecretion and hypermotility contributed to cause a persistent diarrhea with copious mucus and fluid stools in excess of eight daily, methantheline in doses of 400 mg. daily had a limited but appreciably favorable effect. Frequency of defecation and diminished mucus occurred in 11 patients. In the subjective evaluation 16 patients claimed amelioration of pain and tenesmus coupled with ability to control defecation. In this respect the gastrocolic reflex was aborted in 13 cases. This influence of methantheline, however, was not perpetuated on withdrawal of the anticholinergic, nor was it persistent, since there were recurrences in every patient maintained on methantheline within a follow-up of six months, and those recurrences proved refractory to an increase of methantheline to full tolerance.

In the so-called spastic form of constipation there was no evidence of methantheline's influence in 20 patients adequately observed.

In 10 patients specifically complaining of painful urgency to defecate, with proctosigmoidoscopic exami-

7. Asher, L. M.: Gastroscopic Observations on the Effect of Banthine in the Human Stomach, Gastroenterology, to be published.

8. Abbott, F., and Wolf, S.: Effects of Banthine on Gastric Function of Normal Men and Subjects with Peptic Ulcer, unpublished data.

nations showing only extreme spasm and radiological studies entirely negative, preproctosigmoidoscopic parenterally administered methantheline (100 mg.) ameliorated the endoscopic evaluation of spasm in only three of the 10 patients. Methantheline did not ameliorate the dyschezic discomfort in these patients when continued in full therapeutic dosage. In the spasm endoscopically observed in association with actual rectosigmoid disease there was no appreciable influence accreditable to methantheline. No specific influence on rectosigmoid mucosal color or turgescence was observed.

Twenty patients with acute febrile diarrhea of undetermined cause with an average of four stools an hour had complete cessation of defecation for four hours after 100 mg. of parenteral methantheline. No other medication was given and methantheline was not continued. Diarrhea recurred in 17 and was again controlled by methantheline.

Anal sphincteric spasm without associated demonstrable pathology in 20 patients was not demonstrably

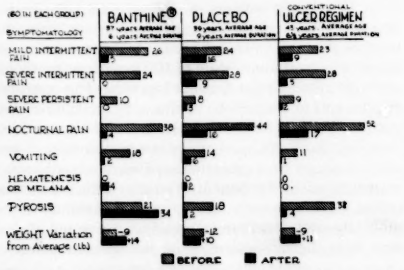

Chart 4.—Comparative therapeutic evaluation of symptomatology in male patients with uncomplicated duodenal ulcers after an 18-month follow-up.

altered by methantheline despite the fact that an occasional patient on large doses of the drug complained of mild fecal incontinence.

HEALING

Our study was in this respect limited to a single specific entity: uncomplicated duodenal ulcer with an 18 month follow-up. Patients submitted to surgery in the course of the study were excluded from the series. All patients initially had definite ulcer craters on radiologic examination.

Sixty duodenal ulcer patients have been managed as ambulatory patients with the usual adjunctive dietotherapy and symptomatic measures in addition to methantheline. The control series were managed by an acceptable ambulatory ulcer regimen supplemented by a placebo resembling methantheline, and a third group comprised patients not given any antispasmodic other than inadequate doses of atropine. Methantheline was used orally in this study, given in 100 mg. doses every six hours until the patient was asymptomatic and thereafter adjusted to 50 mg. before meals and 150 mg. at bedtime.

The curative effect of methantheline so enthusiastically initially sponsored for duodenal ulcer by Grimson and others is questioned. Similar variation may be encountered in any group of ulcer patients; perfect control

Chart 5.—Comparative therapeutic evaluation of physical and radiological findings in male patients with uncomplicated duodenal ulcers after an 18-month follow-up.

studies are not possible. The percentage of "cures" in both groups does not appreciably vary from that of our previous evaluation of ulcer patient management. Reactivation (symptomatic) during therapy was not unusual.

It is difficult to rationalize Lium's[9] concept, that vagotomy might influence the course of ulcerative colitis, which motivated the surgical efforts of Thorek,[10] Dennis,[11] and others. We could demonstrate no influence on healing accreditable to methantheline in 18 patients with severe chronic "idiopathic" ulcerative colitis, nor in 17 patients with regional enteritis.

The premise that pancreatitis may be favorably influenced by methantheline is suggested in our secretory studies and in the pain relief recorded, but we do not feel that a claim of "healing" due to therapy with this drug is justifiable.

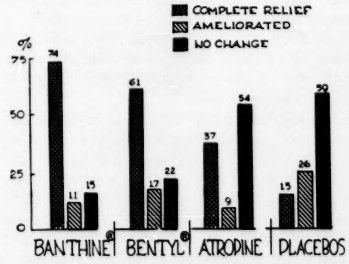

Chart 6.—Pain in pylorospasm without demonstrable concomitant disease in 46 patients.

PAIN RELIEF

Pain depends primarily on the interpretation of discomfort by the individual patient. Pain relief may further evoke an emotional reaction, especially when a parenteral medication is used. In an effort to evaluate this as accurately as possible, considering all of the pitfalls of such an attempt, we used comparable preparations: atropine, bentyl,® and placebos.

9. Luim, R.: Peptic Ulcer and Diarrhea Following Removal of the Prevertebral Ganglia in Dogs, Surgery **9**: 538, 1941.

10. Thorek, P.: Vagotomy for Idiopathic Ulcerative Colitis and Regional Enteritis: Results in 21 Cases, J. A. M. A. **145**: 140 (Jan. 20) 1951.

11. Dennis, C.; Eddy, F. D.; Frykman, H. M.; McCarthy, A. M., and Westover, D.: The Response to Vagotomy in Idiopathic Ulcerative Colitis and Regional Enteritis, Ann. Surg. **128**: 479, 1948.

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Pain, a prominent part of these entities, was considered.

In cardiospasm (18 patients) no relief was provided by methantheline nor by any of the control preparations.

In pylorospasm without demonstrable concomitant disease (46 patients) the results are shown in Chart 6.

In uncomplicated duodenal ulcer with typical pain (200 cases) the results are shown in Chart 7.

In duodenal ulcer with nocturnal ulcer pain (20 cases) the results are shown in Chart 8.

In addition we attempted an evaluation of methantheline pain relief in a group of 159 patients with oral and parenteral preparations; the results are shown in Chart 9.

In six cases of painful pancreatic calculosis in which the symptomatology was fairly specific of chronic recurrent pancreatitis, pain relief was achieved in five with methantheline therapy but was not influenced by bentyl,® atropine, or placebo.

In seven cases of severely painful acute pancreatitis in which methantheline was used the pain was aborted without need for narcotics in four instances, definitely

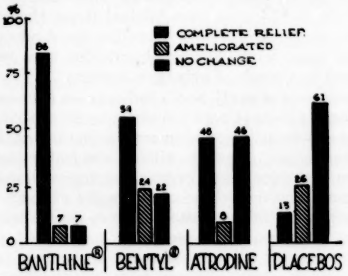

Chart 7.—Typical pain in uncomplicated duodenal ulcer in 200 patients.

ameliorated in two, and the drug was of no apparent influence in one. Atropine used in controls had no influence in any case.

In six patients with biliary colic methantheline did not influence the character or severity of the pain.

No other observations were considered sufficiently specific for evaluation.

COMMENT

While certain reservations obviously must be exacted in accepting conclusions from these studies, one cannot discount the practical aspects of clinical observation and the reasoning that justifies the following statements.

We have confirmed the relative safety of methantheline. True intolerance was rare. Certain unpleasant side effects have been amply emphasized in earlier publications. Curariform reaction was observed once in 562 patients; facial erythemoid dermatitis occurred in two patients. These reactions are probably best termed unusual idiosyncrasies. From our observations coronary heart disease, the preoperative period, and adynamic ileus are probable contraindications to methantheline. We have precipitated ischemic pain in patients with coronary insufficiency. Postoperative urinary retention was a constant occurrence when methantheline was used in the preoperative period. Adynamic ileus has been precipitated and accentuated after methantheline therapy.

It is necessary to consider the individual case in order to judge dosage. Dose schedule is arbitrary. Like Winkelstein [2b] we have shifted to antecibum administration in many instances. Anticipating nocturnal difficulties, we adhere to a large bedtime dose (150 to 200 mg.). After symptomatic and radiographic response in ulcer patients we are advocating 150 mg. at bedtime and 50 mg. every

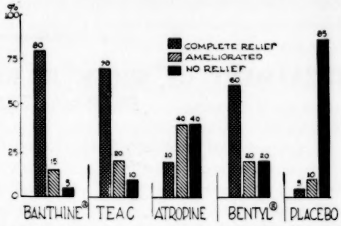

Chart 8.—Nocturnal pain in 20 patients with duodenal ulcers. TEAC is tetraethylammonium chloride.

morning. As yet we have not found it necessary to discontinue the drug.

Gastric secretory inhibition by methantheline does not make us enthusiastic. We feel that volumetric studies are very inaccurate except in complete obstruction, and therefore we are not too impressed by what seems to be a methantheline influence in this respect. However, this inhibition has been a consistent finding in other reports. We concur with others that inhibition of hydrochloric acid secretion by orally administered methantheline is neither consistent nor dramatic. Further, we would like to interject the suggestion that a tolerance to methantheline may be acquired. In four patients who initially showed a satisfactory gastric secretory inhibition in response to methantheline therapy there was a progressive decline at three-month intervals to an eventual absence of response after they had been on methantheline therapy for 12 months.

From our study of small bowel fistulas the data is too inadequate for conclusion but there is the suggestion that ileostomy patients may be assisted by methantheline.

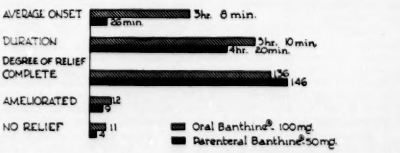

Chart. 9.—Severe typical ulcer pain in 159 patients. Where no relief was experienced, a period of six hours was used in granting duration of effect.

We are encouraged to feel that the pancreatic fistula patients were benefited. The secretory output was definitely influenced. We are cognizant that various healing factors may have contributed to the response. In support of our favorable result have been the prompt response to methantheline in six cases of acute pancreatitis.

While the adjunctive virtues of methantheline in ulcer management are obvious, we stress our earlier conclu-

sion that the basic principles of ulcer management must not be discarded in unwarranted enthusiasm over the dramatic influence of this drug in achieving pain relief.

CONCLUSIONS

1. It is confirmed that methantheline (banthine®) bromide is an effective anticholinergic, a valuable adjunct to the management of many gastrointestinal disturbances characterized by hypersecretion and hypermotility.

2. Methantheline, clinically, is superior to atropine as an antispasmodic. A comparative evaluation with bentyl® hydrochloride (beta-diethylaminoethyl 1-cyclohexylcyclohexanecarboxylate hydrochloride) and tetraethylammonium chloride is not ventured from our present observations, since these two products were not used as controls throughout the study.

3636 St. Charles Ave.

TREATMENT OF SHOCK IN RECENT MYOCARDIAL INFARCTION BY INTRA-ARTERIAL TRANSFUSION

Earl N. Silber, M.D., Burton D. Levin, M.D., Gerald H. Becker, M.D.
and
Robert C. Levy, M.D., Chicago

A significant reduction in the early mortality following coronary thrombosis with myocardial infarction has resulted from the routine use of anticoagulants, primarily by decreasing the incidence of thromboembolic complications.[1] In many respects, however, the treatment of recent myocardial infarction remains inadequate. This is especially true of patients in whom myocardial infarction is initially or subsequently attended by a clinical picture of profound shock. The appalling mortality statistics are a grim testimonial to the helplessness of the clinician in the effective treatment of this type of case.

Rosenbaum and Levine [2] observed a mortality of 26% when shock was mild, 51% when it was moderate, and 93% when it was severe. Rathe,[3] in a study of 274 cases of recent myocardial infarction, found a mortality of 91.6% in patients with a pulse pressure of 20 mm. Hg or less. Shock was present in 69% of his early fatal cases. The studies of Master [4] disclosed an over-all mortality of 58% when the pulse pressure was 20 mm. Hg or less; in patients previously normotensive, however, the mortality was 73%. When the systolic pressure fell below 80 mm. Hg the patient usually died. Mintz and Katz,[5] in a study of 524 cases from Michael Reese Hospital, found a mortality of 77.8% when the blood pressure reached shock levels. Similar observations have been published by Coombs, Fishberg, and others.[6]

Recently one of us (E. N. S.) had occasion to observe a moribund patient (Case 1) in whom severe shock had developed with the onset of an anteroseptal infarct. He was unconscious, pulseless, without obtainable blood pressure, with three to four irregular gasping respirations per minute, and only electrocardiographic evidence of cardiac activity. In desperation an intra-arterial transfusion of plasma was administered. The immediate beneficial response to this procedure was so striking (see accompanying table), although transient, that further investigation of the value of this form of therapy in cardiogenic shock accompanying recent myocardial infarction seemed imperative. The following report of the results obtained in nine cases represents our preliminary experience with this technique.

SELECTION OF PATIENTS

The nine cases in this study were selected from the private medical service of the Michael Reese Hospital. The criteria for selection were (1) a history compatible with a diagnosis of recent myocardial infarction; (2) unequivocal electrocardiographic evidence of recent myocardial infarction; (3) the presence of the clinical picture of severe shock, as characterized by cold, clammy extremities with pallor and/or cyanosis, marked hypotension, small pulse pressure, and faint heart tones frequently accompanied by gallop rhythm.

PROCEDURE

The intra-arterial transfusion was carried out in the following manner. The radial artery was delivered through a 3 to 5 cm. longitudinal incision above the styloid process and cannulated so that the infusion was directed toward the heart. This vessel was selected because it is easily accessible, unaccompanied by other important structures in this area, and, in most instances, may be ligated with impunity when necessary. The apparatus originally employed for this procedure was similar to that reported by Jones and co-workers.[7] However, this equipment proved to be too cumbersome, and in subsequent transfusions we utilized a

Dr. L. N. Katz gave valuable criticism in the preparation of the manuscript.

Postdoctorate Research Fellow, National Heart Institute (Dr. Silber); Residents in Medicine (Dr. Levin and Dr. Becker).

From the Cardiovascular Department, Medical Research Institute, and the Department of Medicine, Michael Reese Hospital. The Cardiovascular Department is supported in part by the Michael Reese Research Foundation and aided by the Herbert G. Mayer Memorial Fund for Cardiovascular Research.

1. Wright, I. S.; Marple, C. D., and Beck, D. F.: Report of the Committee for the Evaluation of Anticoagulants in the Treatment of Coronary Thrombosis with Myocardial Infection (Progress Report on Statistical Analysis of First 800 Cases Studied by This Committee), Am. Heart J. **36**: 801, 1948; Anticoagulant Therapy of Coronary Thrombosis with Myocardial Infarction, J. A. M. A. **138**: 1074 (Dec. 11) 1948. Wright, I. S.: Clinical Progress: The Modern Treatment of Coronary Thrombosis with Myocardial Infarction, Circulation **2**: 929, 1950.

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5. Mintz, S. S., and Katz, L. N.: Recent Myocardial Infarction: Analysis of 572 Cases, Arch. Int. Med. **80**: 205 (Aug.) 1947.

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V 14
1951

modification of the apparatus designed by Kay,[8] which, besides being simple, also enabled us to employ arterialized blood under a readily controlled infusion pressure (see illustration).

Whole blood was used in seven of the nine cases because of its oxygen-carrying capacity and also because the danger of ischemic necrosis and subsequent slough associated with the use of other agents was eliminated.[9]

It was our original intent to limit the total amount of blood administered to 250 to 300 cc., the theoretical capacity of the arterial tree.[10] However, in practice it was usually necessary to employ considerably more blood in order to obtain the desired clinical response (see table). In two cases plasma was employed because whole blood was not immediately available.

In every instance, despite a depressed sensorium, the procedure provoked severe pain along the course of the vessels of the arm. This was particularly true immediately after the transfusion was started. Spasm of the collapsed vessel in response to sudden distention by the blood infused under pressure is apparently the mechanism for the pathogenesis of this pain. Liberal infiltration of 1% procaine solution at the infusion site was ineffective, and the use of morphine was often necessary.

RESULTS

In six of the nine cases the blood pressure was 0 immediately prior to transfusion. In the remaining cases the systolic pressure was 95 mm. Hg or less.[11] In no case was the pulse pressure greater than 30 mm. Hg. A significant initial restoration of blood pressure in eight cases (see table) was induced by 125 to 400 cc. of blood administered in 10 to 20 minutes. In one case (Case 6) there was no blood pressure response and the patient died during the procedure. This patient was moribund when the transfusion was begun. In the seven cases in which whole blood was used, the total amount infused varied from 250 to 500 cc., administered over a period of 20 to 30 minutes.

One hour after completion of the transfusion, the arterial pressure was higher than the initial pressure response in four cases (Cases 3, 4, 7, and 9). In one case (Case 2) there was a slight fall in systolic pressure at the end of one hour. Subsequently the pressure rose again and was maintained. In two cases (Cases 5 and 8) the pressure fell at the end of one hour from the initial level attained with transfusion. In one case (Case 1) the systolic pressure remained at the level of initial response.

In Case 1 the procedure was performed as a trial. In the eight remaining cases, two patients (Cases 3 and 4) made a complete recovery and were discharged from the hospital with no clinical evidence of congestive heart failure or coronary insufficiency. Both of these patients were in a state of profound shock without obtainable blood pressure at the time transfusion was performed. In a third patient (Case 2) in severe collapse intra-arterial transfusion produced a dramatic change in the immediate course of the clinical picture. Consciousness abruptly returned, a normal blood pressure and pulse rate were restored within 10 minutes, and during the next four days this improvement was maintained. On the fifth day following transfusion a paroxysmal tachycardia developed that did not respond to quinidine sulfate or digitalis, and the patient died 128 hours after intra-arterial transfusion. The pronounced favorable alteration of the clinical course complicated by the development of an uncontrollable tachycardia that resulted in death warrants inclusion of this case as an instance of immediate successful response to this form of therapy.

Case 9 is a fourth instance of an immediate favorable response to this procedure. Admitted in severe shock, this patient had a normal blood pressure and pulse rate and was conscious within one hour after transfusion. Ninety-six hours later the patient was apparently making a satisfactory convalescence, when he gasped suddenly and abruptly died. The mode of death and the absence of necropsy findings other than recent myocardial infarction suggested a ventricular arrhythmia as the immediate cause of death. In Cases 5 and 8 there was no sustained benefit from the procedure. In the former case a harsh systolic murmur developed during the transfusion that suggested the possibility of a rupture of the interventricular septum or a papillary muscle. Unfortunately, permission for a necropsy was not obtained. In Case 7, although the patient was somewhat improved following infusion, the blood pressure rose from 0 to 84/65 mm. Hg during exposure of the radial artery. This made evaluation of the therapy difficult, and for this reason the case is included among the failures. The patient in Case 6 died during the procedure. Although the possibility that transfusion contributed to the death of the patient cannot be excluded, post mortem revealed only a recent myocardial infarct, without other damage to the heart or great vessels.

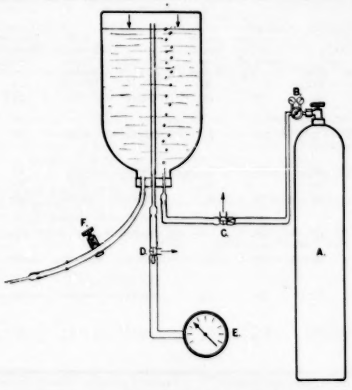

Diagram of apparatus used for intra-arterial transfusion. A is the oxygen pressure tank, and B is the pressure regulator valve. C and D are three-way valves, E is a pressure gage, and F is a screw clamp to regulate the flow of blood into the artery. The blood is "arterialized" by allowing oxygen to bubble into the bottle and escape to the outside through valve D. F is closed during this arterialization. When transfusion is started, F is opened. The manometer is turned into the circuit by turning valve D and records the pressure at which the oxygen entering from A forces blood into the artery.

8. Kay, E. P., and Hacker, V. D.: Treatment of Shock by Aortic Transfusion During Thoracic Operations, J. A. M. A. **134**: 604 (June 14) 1947.

9. Kohlstaedt, K. G., and Page, I. H.: Hemorrhagic Hypotension and Its Treatment by Intra-Arterial and Intravenous Infusion of Blood, Arch. Surg. **47**: 178 (Aug.) 1943.

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11. The level of arterial pressure at which the clinical picture of shock develops is a matter of considerable individual variation. In general, the absolute level is appreciably higher in hypertensive than in normotensive persons (Sampson, J. J., and Singer, I. M.: Plasma and Blood Infusion Following Myocardial Infarction, Am. Heart J. **38**: 54, 1949).

COMMENT

It is generally accepted that development of shock in myocardial infarction is initiated primarily by an abrupt fall in cardiac output. This has been experimentally demonstrated by Mendlowitz [12] at this institution. Similar clinical data were obtained by Grishman and Master [13] with the Wezler-Boeger method and by Starr and Wood [14] by means of ballistocardiography. The peripheral vasoconstrictive phenomena, diminished circulating blood volume, and slowing of the circulation time, which subsequently develop, differ in no way from other forms of oligemic shock.

The development of severe shock carries with it certain grave consequences in myocardial infarction. In the first place, since coronary flow depends primarily upon the mean aortic pressure and the cardiac output,[15] a sharp decline in these two factors not only may favor the development of more extensive infarction, but may exert a myocardium under such circumstances.[16] This depression of the heart may become irreversible and make recovery impossible.[10] The experiments of Prinzmetal [17] suggest that a myocardium weakened and herniating owing to insufficient blood may show a prompt return toward normal with the addition of plasma or blood. Secondly, the cerebral ischemia accompanying a decline in cardiac output may of itself operate to intensify the shock state by depression of vital centers. The finding of Opdyke [18] that circulatory failure could be induced in dogs by means of cerebral ischemia alone suggests that such a mechanism may operate clinically, although there is at present no evidence to support this concept.

Finally, the marked diminution in renal blood flow [19] leads to ischemia and damage of renal tubules.[20] If shock is prolonged lower nephron nephrosis may develop even after a normal blood pressure has been restored.[21] In Cases 3 and 4 of our group, in which the shock state was

Summary of Data in Nine Cases

Case No.	Age, Yr.	Interval Between Infarction and Onset of Shock, Hr.	Duration of Shock Before Transfusion, Hr.	Admission B. P.,* Mm. Hg	B. P. Prior to Transfusion, Mm. Hg	Response to Transfusion: Amount Blood for Initial Response, Cc.	Initial Transfusion Time, Min.	Initial B. P. Rise, Mm. Hg	Total Blood, Cc.	Total Transfusion Time, Min.	B. P. 1 Hr. After Transfusion, Mm. Hg	Final Results	Autopsy Findings
1	50	12	6½	120/80	0/0	300‡	15	90/0	450	20	90/0	Died 9 hr. after transfusion	Recent anteroseptal infarct
2	70	144	4	110/80	90/58	125	10	138/84	250	20	110/74	Died 128 hr. after transfusion	No autopsy
3	60	60	2	168/95	0/0	300	20	70/40	300	20	110/80	Survived §	.....
4	62	½	2½	0/0	0/0	300	20	90/60	500	30	140/90	Survived §	.....
5	65	72	8	198/116	95/70	300	10	115/80	500	20	82/68	Died 50 hr. after transfusion	No autopsy
6	60	168	8	100/70	90/..†	250‡	10	90/..†	550	25	....	Died during transfusion	Recent myocardial infarct
7	62	72	3	90-80/0-0	0/0-84/65	200	15	95/78	350	25	100/80	Died 92 hr. after transfusion	Recent anterolateral infarct
8	70	10	3½	120/80	0/0	250	10	80/70	425	20	70/0	Died 3 hr. after transfusion	No autopsy
9	64	6-8	2	0/0	0/0	300	15	60/0	400	20	110/70	Died 96 hr. after transfusion	Recent and old infarcts

* B. P. = blood pressure. † Diastolic pressure unobtainable. ‡ Plasma was used instead of whole blood.
§ Patient was living and well three months after transfusion.

deleterious effect on the contractile power of the viable muscle. Studies of the shock state based upon changes in ventricular volume, arterial and ventricular pressures, and electrocardiograms point to the deterioration of the present for only two and one-half and three hours, respectively, moderate to severe oliguria and azotemia developed but ultimately disappeared.

There is good evidence to indicate that blood introduced into the radial artery reaches the arch of the aorta, the coronary arteries, and the cerebral circulation. Jones and his colleagues [7] demonstrated by a series of arteriograms in dogs that when iodopyracet concentrated solution (diodrast®) was infused into the femoral artery at levels of systemic pressure less than 50 mm. Hg, all arteries arising from the aortic arch were visualized, including the coronary and cerebral circulations. Page [22] described an immediate inspiratory gasp in dogs exsanguinated to the point of respiratory arrest when an intra-arterial transfusion was administered. Respirations subsequently were restored. Page attributed this phenomenon to the perfusion of the respiratory center. Jones and his associates [7] confirmed this interpretation by demonstrating that this response could be abolished by clamping the vertebral arteries and could be made to reappear by releasing the clamps during the course of an

12. Mendlowitz, M.; Schauer, G., and Gross, L.: Hemodynamic Studies in Experimental Coronary Occlusion: Denervated Heart Experiments, Am. Heart J. **14**: 21, 1937.
13. Grishman, A., and Master, A. M.: Cardiac Output in Coronary Occlusion Studied by Wezler-Boeger Physical Method, Proc. Soc. Exper. Biol. & Med. **48**: 207, 1941.
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18. Opdyke, D. F.: Circulatory Effects of Partial Cerebral Ischemia, Am. J. Physiol. **146**: 467, 1946.
19. Lauson, H. D.; Bradley, S. E., and Cournand, A.: Renal Circulation in Shock, J. Clin. Invest. **23**: 381, 1944.
20. Selkurt, E. E.: Changes in Renal Clearance Following Complete Ischemia of Kidney, Am. J. Physiol. **144**: 395, 1945; Comparison of Renal Clearances with Direct Renal Blood Flow Under Control Conditions and Following Renal Ischemia, ibid. **145**: 376, 1946.

intra-arterial transfusion. In our Cases 1 and 2, this initial inspiratory gasp was observed with the inception of the transfusion, indicating clinical reproduction of the experimental results obtained by Page.

The advantages in the treatment of shock resulting from myocardial infarction by intra-arterial transfusion may be summarized as follows. 1. Only a relatively small amount of blood is required to restore rapidly blood pressure and a normal circulating blood volume. A much larger amount is required intravenously to produce an equivalent effect and must be given slowly by this route to avoid further burdening of the heart. Therefore, it is not often possible to effect a prompt restoration of normal hemodynamics by the venous route.[23] In the presence of pulmonary edema intravenous fluids are contraindicated; however, we have found that intra-arterial infusion appears to have no deleterious effect, even in the presence of pulmonary engorgement. In our experience the improvement in the heart condition accompanying the restoration of an effective coronary circulation is often followed by clinical evidence of a diminution in pulmonary congestion. When shock following recent infarction is accompanied by evidence of systemic venous engorgement, the procedure of choice is the removal of 200 to 400 cc. of blood from the venous side followed by its "arterialization" and rapid introduction into the arterial system. It has been our observation that when intra-arterial transfusion produced no rise in systemic pressure or a transient rise which persisted only during the period of infusion, these were ominous signs, indicative of irreversible peripheral vasodilatation or irreparable myocardial depression.

2. Intra-arterial transfusion, by its improvement of coronary flow, tends to relieve hypoxia and to restore the normal contractile power to that portion of the myocardium that has not been infarcted. For this purpose, arterialized whole blood is the agent of choice. Since the severity of the shock is not necessarily correlated with the extent of myocardial damage, a striking effect may be obtained, despite the clinical picture, provided intra-arterial transfusion is performed early enough before irreversible cardiac depression has been sustained. The importance of prompt initiation of therapy is illustrated by our experience, in which the most gratifying responses occurred in the three cases (Cases 3, 4, and 9) with the shortest intervals between the onset of shock and transfusion. 3. Intra-arterial transfusion results in prompt stimulation of the respiratory centers, as indicated by prompt improvement of respiration and restoration of a normal sensorium. 4. Finally, intra-arterial transfusion provides for the rapid return of kidney function by reestablishing an adequate filtration pressure.

The results reported here, it should be stressed, are of a preliminary nature. Whether this technique will come to occupy an important place in the treatment of shock induced by myocardial infarction is yet to be determined. Our present experience has been sufficiently promising to warrant further investigation of this therapy.[24]

29th and Ellis Ave. (Dr. Silber)

21. Bywaters, E. G. L.: Ischemic Muscle Necrosis: Crushing Injury, Traumatic Edema, Crush Syndrome, Traumatic Anuria, Compression Syndrome; Type of Injury Seen in Air Raid Casualties Following Burial Beneath Debris, J. A. M. A. **124**: 1103 (April 15) 1944.

22. Page, I. H.: Vascular Mechanisms of Terminal Shock, Cleveland Clin. Quart. **13**: 1, 1946.

23. Weisman, S. J.: The Treatment of Shock in Acute Myocardial Infarction: A Review, Am. Pract. **1**: 1078, 1950.

24. We have been informed that Dr. L. C. Akman and Dr. E. F. Berman of Sinai Hospital in Baltimore have recently used intra-arterial transfusions with some striking improvement in some cases.

HYDROCORTISONE AND CORTISONE INJECTED INTO ARTHRITIC JOINTS

COMPARATIVE EFFECTS OF AND USE OF HYDROCORTISONE AS A LOCAL ANTIARTHRITIC AGENT

Joseph L. Hollander, M.D., Ernest M. Brown, Jr., M.D., Ralph A. Jessar, M.D.
and
Charles Y. Brown, M.D., Philadelphia

The antirheumatic effect of cortisone administered parenterally or orally has been documented in numerous reports [1] during the past two years, but little has been written about cortisone administered locally into the arthritic joint. Apparently Thorn [2] was the first to instill an adrenal cortical hormone directly into a rheumatoid arthritic joint. Early in 1950 he injected 10 mg. of hydrocortisone (17-hydroxycorticosterone or compound F) into the inflamed knee of a patient with rheumatoid arthritis and noted a prompt local alleviating effect. Since this was coincident with a general improvement in the condition of the patient, it was felt that the action was systemic and no further experiments were conducted along this line.

Cortisone has been used locally with encouraging results in various inflammatory diseases of the eye.[3] Some reports have claimed benefit from direct application of cortisone in certain skin diseases.[4]

Since a locally used anti-inflammatory agent could be valuable in the treatment of an arthritic process, particularly when only one or a few joints are affected, two of

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Drs. Francis D. W. Lukens and Francis C. Wood, of Philadelphia, and Dr. Philip S. Hench, of Rochester, Minn. assisted in the preparation of the manuscript.

Read (in part) before the Annual Meetings of the American Society for Clinical Investigation, April 30, 1951, and The American Rheumatism Association, June 8, 1951, Atlantic City.

1. Hench, P. S.; Slocumb, C. H.; Polley, H. F., and Kendall, E. C.: Effect of Cortisone and Pituitary Adrenocorticotropic Hormone (ACTH) on Rheumatic Diseases, J. A. M. A. **144**: 1327-1335 (Dec. 16) 1950. Boland, E. W., and Headley, N. E.: Oral Use of Cortisone Acetate, ibid. **145**: 8-11 (Jan. 6) 1951.

2. Thorn, G. W.: Personal communication to the author.

3. Leopold, I. H., and others: Local and Systemic Cortisone in Ocular Disease, Am. J. Ophth. **34**: 361-371 (March) 1951.

4. Spies, T. D., and Stone, R. E.: Effect of Local Application of Synthetic Cortisone Acetate on Lesions of Iritis and Uveitis, of Allergic Dermatitis, and of Psoriasis, South. M. J. **43**: 871-874 (Oct.) 1950.

us (J. L. H. and E. M. B.) and Stoner [5] attempted to utilize cortisone by injecting 25 mg. of the suspension directly into the inflamed knee joint in seven patients with rheumatoid arthritis. Three of the seven patients said they had improvement in symptoms the day following the injection. The subjective improvement lasted only 24 hours, and objective measurements failed to demonstrate any consistent change in the condition of the injected joint. Despite the suggestion that the locally injected cortisone had some beneficial action in the three patients, the action was too transient and of insufficient degree to be of practical value. Freyberg and others [6] also injected cortisone locally into the knee joints of eight patients in amounts up to 50 mg. Although the benefit seemed more consistent than the results just mentioned, the effect again was too transient and inadequate to be of practical value in most cases.

The reports of Mason and others [7] suggested the hypothesis that hydrocortisone rather than cortisone might be the principal corticoid with anti-inflammatory activity at the tissue level. When hydrocortisone became available

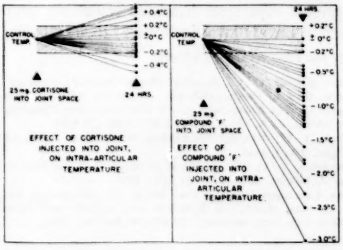

Fig. 1.—Comparative effects of cortisone (left) and hydrocortisone (right) on the joint temperature 24 hours after the intra-articular injection of each. Control temperatures are represented as the zero point, and the change after 24 hours is expressed in centigrade degrees above or below the control. Each slope represents a single study. The shaded area shows standard deviation.

through Merck and Company [8] in January, 1951, it was decided to attempt local administration of the hormone and to compare its effect with that of cortisone in the rheumatoid arthritic joint.

5. Hollander, J. L.; Brown, E. M., Jr., and Stoner, E. K.: Unpublished data.

6. Freyberg, R. H.; Patterson, M.; Adams, C. H.; Durivage, J., and Traeger, C. H.: Practical Considerations of the Use of Cortisone and ACTH in Rheumatoid Arthritis, Ann. Rheumat. Dis. **10**: 1-13 (March) 1951.

7. Mason, H. L.: Urinary Excretion of Steroids During Administration of ACTH, in Mote, J. R.: Proceedings of the First Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1950, pp. 168-176. Nelson, D. H.; Samuels, L. T., and Reich, H.: Cortical Steroid in Mammalian Blood After ACTH Stimulation, in Mote, J. R.: Proceedings of the Second Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1951, Vol. 1, pp. 49-53. Pincus, G.; Hechter, O., and Zaffaroni, A.: Effect of ACTH upon Steroidogenesis by Isolated Perfused Adrenal Gland, in Mote, J. R.: Proceedings of the Second Clinical ACTH Conference, Philadelphia, The Blakiston Company, 1951, Vol. 1, pp. 40-48. Conn, J. W.; Louis, L. H., and Fajans, S. S.: Probability that Compound F is Hormone Produced by Normal Human Adrenal Cortex, Science **113**: 713-714 (June 22) 1951.

8. The cooperation of Dr. James M. Carlisle and Dr. Augustus Gibson, of the Medical Division, Merck and Company in supplying hydrocortisone made this study possible.

9. Horvath, S. M., and Hollander, J. L.: Intra-Articular Temperature as Measure of Joint Reaction, J. Clin. Invest. **28**: 469-473 (May) 1949.

10. Hollander, J. L.; Stoner, E. K.; Brown, E. M., Jr., and DeMoor, P.: Joint Temperature Measurement in Evaluation of Anti-Arthritic Agents, J. Clin. Invest. **30**: 701-706 (July) 1951.

COMPARISON OF EFFECTS OF CORTISONE AND HYDROCORTISONE USED LOCALLY IN RHEUMATOID ARTHRITIS

Patients chosen for the comparative study were those with active rheumatoid arthritis involving both knees, since these joints are most easily injected. The contralateral knee served as an untreated control when either cortisone acetate or hydrocortisone acetate suspension was administered into one joint. Since patients with rheumatoid arthritis are extremely suggestible, questioning as to symptomatic improvement was minimized. Evaluation of effect was based on measurement of circumference, degree of tenderness, and range of motion. In 43 instances additional data were obtained by performing cell counts of the synovial fluid obtained by daily aspiration of the knees and daily determinations of the intra-articular temperature.[9] The intra-articular temperature has been shown to reflect changes in joint inflammation.[10]

METHOD FOR INJECTION

The skin over the anteromedial surface of the knee was cleansed with alcohol, and a 20-gage needle (on a dry syringe) was quickly inserted into the synovial cavity. Procaine infiltration of the tissues was only necessary when the joint contained little excess fluid. The withdrawal of even a few drops of synovial fluid proved the entrance of the needle into the joint space. The needle was left in place and the aspirating syringe replaced by a second syringe, into which the desired amount of cortisone or hydrocortisone suspension had been drawn. The hormone was injected gently. The plunger was slightly withdrawn to be sure the needle was still in the joint space, and even "pumped" a few times to assist the mixing of the suspension with the synovial fluid. The needle was then withdrawn, and the joint was moved a few times to assist mixing. A small sterile dressing was placed over the site. The patient was then allowed to go about his usual activities.

RESULTS

Twenty-five milligrams of cortisone acetate was injected intra-articularly in each of 17 tests on 12 patients with rheumatoid arthritis. No significant improvement in the physical signs of the inflamed joint was detected in any case throughout the subsequent week of observation, but there was subjective benefit in five. Larger doses of cortisone (50 to 60 mg.) in four instances only produced local irritation of the synovium with temporarily increased discomfort and swelling.

With the use of cortisone there was no marked reduction in the synovial fluid cell count in any instance, nor was there significant depression of the intra-articular temperature (Fig. 1). In two tests after local cortisone administration a fall of 0.5 C (0.9 F) in joint temperature was noted. Four tests showed a rise up to 0.5 C, and 11 showed no significant change. The mean difference is zero.

On the other hand, in 178 studies on 51 patients hydrocortisone acetate in doses of 25 mg. was injected into the joint space. After each injection there was significant improvement in swelling, tenderness, and freedom of motion within 24 hours. Because of difficulty in obtaining enough synovial fluid at this time, cell counts 24 hours after injection could be performed in only seven instances. In six of the seven the total cell count was reduced 50% or more. The most demonstrable effect of the administration of hydrocortisone was the depression of joint temperature in the treated knee as compared with that in the contralateral untreated knee. This was studied in 26 instances (Fig. 1).

V 14
1951

The effect of hydrocortisone on intra-articular temperature is illustrated in the right half of Figure 1. Significant falls in temperature from 0.4 C (.72 F) to 3.0 C (5.4 F) following an injection were seen in 23 of 26 instances. The mean temperature fall was 1.1 C (1.98 F). The Figure does not show that in two of the three cases in which

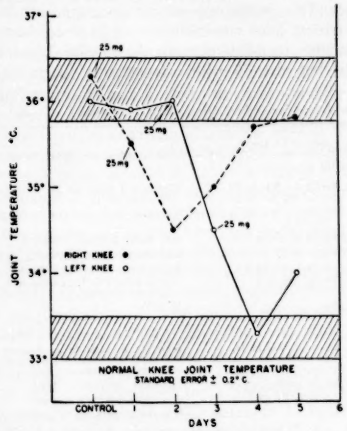

Fig. 2.—Effect of hydrocortisone injected into rheumatoid arthritic joints (knees) on the joint temperature. Upper shaded area shows standard deviation; lower shaded area represents normal knee joint temperature.

no significant fall occurred a subsequent injection of 37.5 mg. of hydrocortisone into the joint produced a significant fall.

Figure 2 shows the typical effect of repeated injections of hydrocortisone into the knee on the joint temperature. The patient's left knee was used as a control and showed no change, while the temperature of the right knee was significantly reduced by each of two injections of hydrocortisone on successive days. On the following two days the hydrocortisone was injected into the left knee, producing marked reduction in joint temperature, while the right knee temperature returned to the pretreatment level four days after the last injection into it. Figure 2 graphically illustrates the local effect of the hydrocortisone, since the control knee temperature showed no change. Symptomatically, the control knee was likewise unaffected by injections of hydrocortisone into the opposite knee, nor were general metabolic effects noted.

Figure 3 illustrates a somewhat similar study on another patient and shows that use of at least 25 mg. of hydrocortisone is usually necessary to produce the effect on joint temperature. Here again the left knee served as a control, while the right was injected with increasing doses of hydrocortisone; then the right knee returned to pretreatment temperature as the left was treated.

Sixty-nine patients with rheumatoid arthritis have now been observed for as long as nine months following injections of hydrocortisone into one or more joints, repeated as often as necessary to continue the beneficial effect. A brief summary of results following individual injections is presented in the table. From the table it will be observed that there was considerable variation in degree of benefit obtained, and also in the duration. Injections were usually not repeated until the benefit from the previous hydrocortisone instillation had worn off (i. e., the inflammation was returning to the pretreatment state). In 18 instances another inflamed joint (ankle, shoulder, elbow, hip, wrist, or finger) was injected. The results were similar to those obtained in the knee.

For 11 cases, in which the joint involvement was severe, use of 37.5 mg. of hydrocortisone was necessary to produce an effect of sufficient degree and duration to be of practical value. Still larger doses have been utilized, but they have not so far proved more beneficial. Relapse following the period of beneficial effect was gradual, with swelling and limitation of motion often recurring to the degree originally noted before marked pain and stiffness returned. This relapse, though apparently inevitable, has never appeared worse than the pretreatment arthritic state in this series of cases. Alleviation from repeated injections usually equaled or even exceeded the original effect, even after as many as 17 reinjections. In two patients, however, successive injections have produced diminishing responses, necessitating increased dosage to maintain benefit.

Since it appeared that hydrocortisone acetate had a consistent anti-inflammatory effect on the rheumatoid arthritic joint when administered locally, whereas cortisone acetate did not, further studies were undertaken to determine whether solubility of the preparations was responsible for the difference. Whereas hydrocortisone is

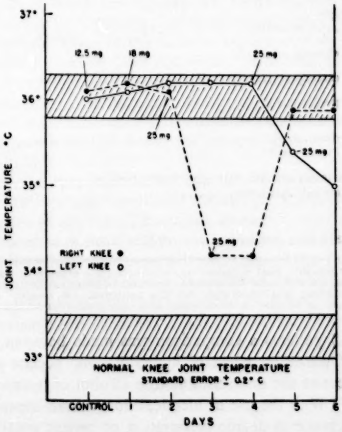

Fig. 3.—Effect of injecting increasing doses of hydrocortisone into rheumatoid arthritic joints (knees) on the intra-articular temperature.

slightly more soluble than cortisone acetate in water, much more soluble forms of cortisone (namely, the free alcohol of cortisone and cortisone tricarballylate) appeared no more effective than cortisone acetate in nine experiments.

It has recently been determined [11] that hydrocortisone, though somewhat more soluble in water than cortisone, is less soluble in blood plasma. Cortisone acetate is soluble in proportions up to 16 mg. per 100 cc. of plasma; whereas, hydrocortisone acetate is soluble in proportions up to 2.2 mg. per 100 cc. Thus, cortisone acetate is actually more than seven times more soluble in plasma. Since this same situation would presumably obtain with synovial fluid, it is possible that the relative insolubility of hydrocortisone enhances the local effect by slower dispersion from the joint.

LOCAL ADMINISTRATION OF CORTISONE AND HYDROCORTISONE IN OTHER CONDITIONS

Although in our experience, as well as in that of others,[13] hydrocortisone administered systemically has been no more effective than cortisone or corticotropin (ACTH); the much more pronounced local effectiveness of hydrocortisone suggested certain therapeutic possibilities. This preliminary report covers the results of the empirical local administration of hydrocortisone in 129 patients, including not only the 69 with rheumatoid arthritis but also 39 with osteoarthritis (degenerative joint disease), 13 with bursitis, 3 with acute disseminated lupus erythematosus, 4 with inflammatory eye disease associated with rheumatoid arthritis, 2 with acute gouty arthritis, and 3 with acute traumatic arthritis (sprain). Nearly 700 local injections have now been administered to the 129 patients, and as yet no untoward effects have been observed. A summary of the data is tabulated in the table.

Results Following Single Hydrocortisone Injection into Arthritic Joints (or Other Areas of Inflammation)

Diagnosis and Joint Injected	No. of Cases	Dosage (Mg.)	Degree of Local Improvement *	Duration of Beneficial Effect
Rheumatoid arthritis:				
One or both knees	62	25 in 51 37.5 in 11	4+ in 13, 3+ in 35 2+ in 12, 1+ in 2	Shortest 2 days (in 2), longest 10 weeks (in 1), average 8 days
Ankle	4	25	4+ in 1, 3+ in 1, 2+ in 2	3 days-4 mo., average 12 days
Elbow	4	15-20	3+ in 2, 2+ in 2	2-13 days, average 6 days
Shoulder	3	25	3+ in 2, 2+ in 1	4-17 days, average 10 days
Hip	3	25	4+ in 1, 2+ in 2	3-27 days, average 13 days
Wrist	3	15	2+ in 2, 0 in 1	0 in 1, 5 days in 1, 11 days in 1, average 5 days
Metacarpophalangeal	1	10	3+	13 days
Osteoarthritis:				
One or both knees	37	25	4+ in 22, 3+ in 14, 2+ in 1	Shortest 6 days in 1, longest over 5 mo., in 2 (to date) average 3 weeks +
Hip	2	25	3+ in both	7-13 days, average 10 days
Terminal phalangeal (Heberden's node)	2	5	3+ in 1, 2+ in 1	5-15 days, average 10 days
First metatarsophalangeal	1	10	4+	6 weeks (continues to date)
Acute traumatic arthritis (sprain):				
Knee	3	25	4+ in 1, 3+ in 2	Continues to date (4 mo. in 1, 2 mo. in 1, 6 weeks in 1)
Acute gouty arthritis:				
Knee	2	25	4+ in both	Continues to date (10 weeks in 1, 7 weeks in 1)
Bursitis:				
Acute subdeltoid	3	15-25	4+ in all	Continues to date (4 mo. in 1, 3 mo. in 2)
Chronic subdeltoid	7	15-25	3+ in 3, 0 in 4	Continues to date (3-4 mo.) in 3, 0 in 4
Olecranon	2	25	4+ in 1, 3+ in 1	Continues to date (12 and 6 weeks)
Prepatellar	1	25	4+	Continues to date (5 mo.)
Disseminated lupus erythematosus:				
Knee	1	25	4+	Continues to date (9 weeks)
Pleural cavity	2	100	4+ in both	5 mo. + in 1, 4 mo. in 1
Rheumatoid arthritis with eye inflammation:				
Chronic episcleritis	3	1 drop q. i. d. (Suspension of 5 mg. per cc.)	3+ in 2, 0 in 1	Maintained as long as drops continue (16 weeks in 1, 13 weeks in 1)
Sjögren's syndrome	1	1 drop q. i. d.	3+	Maintained with drops (15 weeks)

* 4+ benefit: local complete remission—complete absence of pain, swelling, tenderness, or limitation of function. 3+ benefit: complete relief of symptoms, marked reduction of tenderness and swelling, markedly improved function. 2+ benefit: marked reduction of pain and stiffness, definite reduction of swelling and tenderness, function improved. 1+ benefit: lessening of pain and stiffness, some decrease in swelling and tenderness, little change in function. 0 benefit: includes cases with only subjective or no improvement.

In 13 patients a comparison was made between the anti-inflammatory effect of hydrocortisone acetate and the effect of the more soluble free alcohol of hydrocortisone.[12] With the use of identical doses there appeared no difference in degree or duration of benefit obtained from local injection of the two preparations into the rheumatoid arthritic joint.

Results in Osteoarthritis.—In an effort to determine whether hydrocortisone was "antirheumatic" or simply a nonspecific anti-inflammatory agent, injections were made into the joints of patients with osteoarthritis and

11. Bornn, A.: Personal communication to the author.

12. Drs. Lee Van Antwerp and I. C. Winter, of G. D. Searle and Company supplied the hydrocortisone in free alcohol form.

13. Polley, H. F., and Mason, H. L.: Rheumatoid Arthritis: Effects of Certain Steroids Other than Cortisone and of Some Adrenal Cortex Extracts, J. A. M. A. 143: 1474-1481 (Aug. 26) 1950.

V 14
1951

other forms of joint disease. Results are summarized in the table.

Systemic cortisone or corticotropin therapy has been reported helpful in some cases of osteoarthritis,[14] but the usual benign course of this prevalent condition makes the advisability of utilizing these agents doubtful because of expense and possible dangers, particularly in persons past middle age—the very group suffering from osteoarthritis.

Hydrocortisone acetate was injected into the osteoarthritic joints of 39 patients. Since the knees are frequently troublesome, and are most easily injected, these joints were most frequently studied. Acute inflammation is seldom seen in osteoarthritis, so the criteria for improvement are not as sharply defined as in rheumatoid arthritis. It seems significant, however, that in 36 out of 37 instances a complete or nearly complete disappearance of symptoms and complete return of normal work tolerance was noted within 24 hours after the injection of 25 mg. of hydrocortisone into the painful joint. The duration of relief in these cases was several times as great as in cases of rheumatoid arthritis (usually three weeks or longer) and often persisted until the patient abused the affected joint in some way. Reinjection was made whenever the symptoms recurred.

For comparison of effects, cortisone acetate in doses of 25 mg. was substituted for hydrocortisone, without the patient's knowledge, in 22 instances. In no instance was the marked alleviation previously noted after hydrocortisone injection reduplicated by use of cortisone. All the patients commented on this lack of effectiveness, thinking the drug had lost its beneficial action on them. They were persuaded to submit to an additional injection, this time of hydrocortisone. The beneficial action was again obvious in everyone.

In two patients with unilateral osteoarthritis of the hip (malum coxae senilis), hydrocortisone was injected into the diseased joint. Both of these were elderly women who had previously failed to respond appreciably to systemically administered cortisone.[15] A prompt alleviation of symptoms and improvement in range of motion and function was noted in both after 24 hours; this persisted 7 days in one and 13 days in the other. Reinjection is being carried out periodically in both instances, as symptoms reappear, but longer observation is needed before conclusions can be drawn concerning long-range practicability and benefit in such cases.

Results in Acute Traumatic Arthritis.—In three patients an acute swelling of the knee with effusion, which followed known injury, was treated by aspiration, injection of 25 mg. of hydrocortisone, and application of an elastic bandage. Although such conditions are frequently relieved by aspiration, rest, and support without the use of a hormone locally, the striking observation in these patients was the complete absence of pain, tenderness, and swelling, which was noted within four hours of the time of treatment and which has continued four months, two months, and six weeks, respectively (to the time of writing). No control studies with cortisone were made.

Results in Acute Gouty Arthritis.—Local use of hydrocortisone certainly would not be expected to alter the metabolic derangement occurring in cases of this disease. The desire to study the range of effectiveness of the hormone led to its trial in two patients with typical gout, one in the late tophaceous stage who had an acute exacerbation in the knee and the other with an acute gouty knee which had responded only moderately to colchicine administration. In each instance a complete amelioration of symptoms and signs was noted in the affected knee within 24 hours of the intra-articular injection of 25 mg. of hydrocortisone. In neither patient has the inflammation recurred so far, but routine interval management of gout has been carried out in both. No control injections of cortisone were attempted.

Results in Bursitis.—The similarity of inflammation of bursal sacs to that of joints has long been known. Empirically an attempt was made to treat bursitis with local injections of hydrocortisone into the bursal sac. Of the 13 patients observed, 3 had acute subdeltoid bursitis of only a few days' duration, 7 had chronic subdeltoid bursitis, of which 5 showed calcium deposits on x-ray, 1 had bilateral olecranon bursitis with rheumatoid arthritis, 1 had unilateral acute traumatic olecranon bursitis, and 1 had chronic traumatic prepatellar bursitis.

In all three cases of acute subdeltoid bursitis it was possible to aspirate a little fluid from the bursa, so it was assumed that the 15 mg. of hydrocortisone injected actually entered the bursal sac. Within three hours in each instance there was complete alleviation of pain and tenderness, and full range of shoulder motion was possible without pain. This relief has persisted to the time of writing—four months in one case and three months in the others. No other therapy was utilized. Local injection of cortisone into the inflamed bursae of two previous cases had produced no such benefit.

The results in chronic subdeltoid bursitis, however, have been much less satisfactory. In these cases it was impossible to be sure the hormone was injected into the bursal sac. Three of the patients experienced an almost complete relief of pain and return of normal range of shoulder motion after a single injection of hydrocortisone. In the other four instances, however, no relief was obtained even after repeated trials, and in two the shoulder pain was reported worse for several days after each injection.

In the case of bilateral chronic olecranon bursitis there were small rheumatoid nodules present around the margins of the sacs. The bursae contained several cubic centimeters of fluid, which was aspirated, and 25 mg. of hydrocortisone was injected into each. After this procedure the bursal effusion disappeared, and the ring of rheumatoid nodules became softer and smaller. No recurrence has been observed after six weeks. The effusion and tenderness in the olecranon bursa of the patient who had traumatized his elbow disappeared promptly after the instillation of hydrocortisone and have not recurred even after three months.

The patient with chronic prepatellar bursitis, or "housemaid's knee," obtained prompt relief and has had no recurrence of bursal effusion or tenderness five months

14. Dale, M.: Treatment of Osteoarthritis with ACTH, J. Michigan M. Soc. **49**: 1068-1069 (Sept.) 1950. Boots, R. H.; Yen, L. C.; McMorrow, K. J., and Ragan, C.: Cortisone Therapy in Degenerative Joint Disease of Hip, J. A. M. A. **147**: 549-551 (Oct. 6) 1951.

15. Brown, C. Y.; Jessar, R. A., and Hollander, J. L.: Cortisone in Treatment of Osteoarthritis of the Hips, J. A. M. A. **147**: 551-553 (Oct. 6) 1951.

after the injection of hydrocortisone, even though she has continued to kneel while working.

Not included in the summary of results is one case of a ganglion, or synovial hernia, of the wrist, into which 20 mg. of hydrocortisone was injected, with prompt disappearance of the enlargement. There has been no recurrence after eight weeks of observation.

Results in Disseminated Lupus Erythematosus.—Although local measures in this systemic disease are merely palliative, an acute exacerbation in a joint or in a serous cavity was considered worthy of local hydrocortisone administration, at least for trial.

Two young women with severe disseminated lupus erythematosus had a persistently recurring pleural effusion severe enough to embarrass respiration and requiring repeated chest aspiration for removal of the excess fluid. Both these patients had been receiving systemic cortisone therapy for some months, with fairly adequate control of the fever and joint pain.

In the first patient the left pleural cavity, which had required aspiration at least weekly, was again drained of 750 cc. of fluid. One hundred milligrams of hydrocortisone suspension was mixed with 50 cc. of the pleural exudate, which was then injected into the pleural cavity without adverse reaction. Systemic cortisone therapy has been continued. There has been no reaccumulation of the effusion in the left side of the chest after five months. The fluid in the right side of the chest, which had always reaccumulated much more slowly, gradually diminished also during the observation period.

The second patient had not required chest aspiration as frequently as the first patient, and both pleural cavities reaccumulated fluid at about the same rate. The left side of the chest was aspirated, 600 cc. of fluid removed, and 100 mg. of hydrocortisone injected. The right side of the chest was also aspirated and 500 cc. removed, but no hydrocortisone was injected. After two weeks the right side of the chest, by fluoroscopic examination and physical signs, showed reaccumulation of fluid as before, but the treated left side showed no fluid. The right side of the chest was then aspirated and 100 mg. of hydrocortisone injected. Recurrence of fluid has just been noted in both pleural cavities after four months. Reinjection has been successfully accomplished. Systemic cortisone therapy has been continued. No local cortisone injections into the chest cavity have been tried so far.

In the third patient with disseminated lupus erythematosus, in addition to her other symptoms, an acute swelling of the left knee had recently developed. This was aspirated and 25 mg. of hydrocortisone injected. Within 12 hours all signs of the local inflammation had subsided, with no return as yet (9 weeks).

Results in Inflammatory Eye Disease with Arthritis.—One patient with Sjögren's syndrome (keratoconjunctivitis sicca) and three with chronic episcleritis as complications of rheumatoid arthritis were treated with eye drops of hydrocortisone, since topical and parenteral cortisone therapy had failed to relieve the inflammation. The drops contained 5 mg. of hydrocortisone per cubic centimeter (1:5 dilution of the standard suspension with isotonic sodium chloride solution).

In none of the four patients was improvement rapid, often requiring a week or 10 days to become evident. One of the four showed no improvement after three weeks, so the treatment was discontinued. In three of the four patients the subsidence of inflammation by the end of two weeks was obvious. In the patient with Sjögren's syndrome the punctate ulcerations on the cornea completely disappeared, and the lacrimal secretion actually increased to overabundance. In the two patients with chronic episcleritis the conjunctival inflammation almost completely disappeared, vision improved, and the symptoms were relieved as long as the drops were continued but recurred within a week when cortisone drops were substituted.

COMMENT

The reason for the difference in effectiveness between cortisone and hydrocortisone given locally is unknown. Since hydrocortisone is only one-seventh as soluble in plasma as cortisone, it might diffuse less rapidly and thus become a local "reservoir" of anti-inflammatory hormone within the joint space. However derived, there certainly is a physiological difference between the hormones, at least at the tissue level.

The failure of hydrocortisone to produce an appreciable antiarthritic effect when injected outside the synovial sac is probably because such injections do not reach all the inflamed synovial tissue.

Whereas in patients with rheumatoid arthritis the systemic nature of the disease and usual multiplicity of involved joints would often make local therapy impractical, in the following types of patients therapeutic benefit from injection of hydrocortisone into one or more involved joints has been observed: (1) those patients with only one or two peripheral joints involved; (2) those in whom only a few peripheral joints were still actively inflamed, even though others have been ankylosed; (3) those in whom use of cortisone or corticotropin was contraindicated because of psychosis, hypertension, cardiac decompensation, nephritis, tuberculosis, etc., or because of economic inability to permit such therapy (in such instances the local injections relieved the symptoms in a few of the worst joints); (4) those in whom use of cortisone or corticotropin has had to be withdrawn because of insufficient effect, untoward reactions, or for economic reasons (in such patients the local alleviation of symptoms in the worst joints tapered the effects of withdrawing hormone treatment); (5) those in whom use of cortisone or corticotropin has produced a desirable amelioration of rheumatoid arthritis except in a few of the most severely involved joints (in these patients the systemic therapy with hormone was continued, and hydrocortisone was administered periodically into the resistant joints as supplementary treatment); (6) those in whom a sudden exacerbation of inflammation has occurred in one or a few joints or in whom orthopedic correction of joint deformity had been, or was to be, undertaken (in these patients the method served as an aid in local rehabilitation).

That the beneficial effect of use of hydrocortisone locally is nonspecific is borne out by its effectiveness in a variety of inflammations from different causes. Apparently this method offers no cure for the inflammatory process, and hydrocortisone may merely be an alleviating agent which temporarily suppresses the local reaction to an irritant. Diagnosis must obviously be established

V 14
1951

before this method is used, particularly if an infectious etiology is suspected. Use of local hydrocortisone may be contraindicated in the presence of infection, unless specific antibiotics are used concomitantly.

In the arthritic patients included in this report, only supportive therapeutic procedures have been utilized concomitantly with the local hydrocortisone injections, unless otherwise specified. The method has so far proved of little value in patients with spinal joint involvement or when many peripheral joints are inflamed.

Before this method for producing amelioration of local inflammation can be called a practical aid in management of disease, it must stand the test of time. In both rheumatoid arthritis and osteoarthritis the local use of hydrocortisone has proved of practical value on repeated injection for periods up to eight months in a relatively large series of patients. The long-range effect must still be determined, but certainly there have been no detrimental effects as yet observed.

It is more difficult to draw conclusions from the results of local therapy with hydrocortisone in the other conditions treated. The periods of observation have been short, and the number of patients in each disease group insufficient. Nevertheless, these early encouraging results suggest a much more widespread usefulness for locally administered hydrocortisone, which certainly warrants further clinical investigation.

It appears likely that hydrocortisone will become available to the physician within a relatively short time, even though present supplies are insufficient for all experimental needs. The amount needed for local injection, about 25 mg. per joint per week, would be so small that the cost should present no great economic problem to the patient.

SUMMARY

Injected locally, hydrocortisone (17-hydroxycorticosterone or compound F) is much more effective than cortisone in suppressing the synovial inflammation of rheumatoid arthritis. The reason for this difference is unknown. Nearly 700 injections of hydrocortisone have been made into the joints of 129 patients without untoward effects. In 69 patients with rheumatoid arthritis injection of hydrocortisone into one or more joints has resulted in prompt local alleviation of symptoms and signs. The completeness of improvement has varied considerably, and the duration of benefit from each injection has varied from a few days to several weeks. Repeated injections have been equally effective. In 39 patients with osteoarthritis, injections of hydrocortisone into one or more joints has resulted in prompt relief of symptoms and signs. There has been consistently greater relief for longer periods in this condition than observed in rheumatoid arthritis. Repeated injections are equally effective and may maintain remission of symptoms for long periods. Preliminary trials with use of hydrocortisone locally in cases of various forms of bursitis, gouty arthritis, disseminated lupus erythematosus, traumatic arthritis, and ocular inflammations complicating rheumatoid arthritis have been encouraging. There has been an absence of systemic effects and adverse reactions from this local method of utilizing hydrocortisone. Cessation of injections has not been followed by exacerbations of the local inflammation but only by gradual relapse to pretreatment status. These observations suggest that the local administration of hydrocortisone may be of practical value in the management of certain local inflammatory states.

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MANAGEMENT OF TETANUS

EFFECT OF PENICILLIN ON CLOSTRIDIUM TETANI IN VIVO

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The most important objectives in the management of tetanus are: (1) neutralization of free toxin with tetanus antitoxin; (2) elimination of the source of toxin by débridement of all accessible portals of entry or by administration of antibiotics; (3) prevention of convulsions and severe muscle spasms by use of sedatives, anesthetics, or such muscle relaxants as curare preparations and, preferably, mephenesin; (4) maintenance of efficient hydration and of electrolyte balance; (5) maintenance of proper nutrition, and (6) prevention and treatment of pulmonary complications through maintenance of unobstructed air passages by mechanical means and by administration of antibiotics.

Most observers [1] agree that 50,000 units of tetanus antitoxin given intravenously is a dose large enough to neutralize all the unfixed or free toxin in any patient with a chance of recovery. Since it is impossible to ascertain whether fixation of the toxin by the cells of the central nervous system is progressing, and since symptoms may arise from fixation of a sublethal dose of toxin, it is advisable to administer 10,000 units of antitoxin intramuscularly for the first four or five days. This prevents fixation by the central nervous system of a dose sufficiently large to be fatal. The latter aspect of tetanus treatment has been discussed by Firor and colleagues,[1e] Schumacker and others,[1f] Firor himself,[1g] and Firor and Jonas.[1h] Administration of 200,000 units of tetanus antitoxin intrathecally, although of great benefit, is impractical, since general anesthesia or curarization is required in the majority of severe cases of tetanus presenting fre-

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quent convulsions and opisthotonos. Besides, tetanus antitoxin may lead to untoward reactions when given by this route.

The tissues around the portal entry should be infiltrated with 10,000 units of tetanus antitoxin, and after one hour débridement with wide excision of all the necrotic tissue at the portal of entry is advisable. The antitoxin will neutralize the toxin in the lesion and around it, thus preventing its diffusion and dissemination during débridement. Removal of necrotic tissue will reduce the multiplication of Clostridium tetani, and exposure of the lesion to air may help in altering the metabolism of the bacillus, since it is an anaerobic saprophyte.[2]

Treatment of convulsions is always a major problem in severe cases. Phenobarbital (luminal*) sodium in intramuscular doses of 0.13 gm. every two or three hours is beneficial. Large rectal doses of chloral hydrate, paraldehyde, or ether in oil can be used. Simple methods failing, the physician may resort to such muscle relaxants as mephenesin or curare preparations, but their use requires constant medical attention and the administration of the latter is fraught with danger.

The patient with tetanus loses great amounts of water and sodium chloride by perspiration and respiration. This, coupled with dysphagia, leads, in severe cases, to extreme dehydration. Although it is not always possible to measure the fluid and electrolyte requirements in every case of tetanus, the daily intravenous administration of 2,000 to 4,000 cc. of isotonic sodium chloride solution will prevent clinical signs of dehydration and acidosis in most cases.

The extreme restlessness, convulsions, fever, and overwhelming toxemia observed in severe cases of tetanus lead to an increase in body metabolism, with a corresponding increase in caloric requirements. In many instances the addition of 5% dextrose to the intravenous fluids suffices, but markedly debilitated patients may require feeding by stomach tube. The feedings should consist of substances yielding readily usable calories, such as carbohydrates. The constant pressure of the stomach tube in the nasopharynx, however, may increase the frequency and severity of the convulsions, provoke severe and prolonged laryngeal spasms, and lead to overproduction and aspiration of secretions, all of which might result in pulmonary complications.

Preventing pulmonary complications is mainly a mechanical problem. The cough reflex is depressed, and the respiratory excursions are limited; strong sedation increases the likelihood of aspiration of secretions from the upper respiratory tract. The respiratory pathways can be maintained patent by frequent suction, raising the foot of the bed for drainage, and, in the severest cases, by tracheotomy. Removal of secretions may prevent death from asphyxia or aspiration pneumonia.

If there is no response to frequent suction and if the recurrent spasms of the thoracic and laryngeal muscles cannot be controlled, tracheotomy should be resorted to. This procedure, done under local anesthesia, will permit by-passing of the secretions of the mouth, pharynx, and larynx; it will neutralize the effects of the laryngeal spasms and will permit the direct removal of secretions already aspirated into the trachea and bronchi. It will also allow direct flow of oxygen into the lungs through the tracheal tube, by-passing the obstruction caused by laryngeal spasms, and will render the use of a respirator more practical in case of impending respiratory paralysis.

Since not all portals of entry are accessible and since not all accessible portals can be properly débrided, a specific antibiotic is needed. Eradication of the tetanus bacillus eliminates the very source of production and diffusion of tetanus toxin. Removal of other bacteria sensitive to antibiotics from the infected wound contributes to improvement in the healing processes, and may lead to further interference with the metabolic requirements of Cl. tetani. The role of a potent antibiotic in prevention and management of pulmonary complications is also emphasized.

Penicillin has been recommended as a valuable adjuvant in the management of tetanus for its effect in preventing secondary bacterial infections and on the growth and multiplication of Cl. tetani at the portal of entry.[3] Since there is enough evidence to show that penicillin is an antibiotic for Cl. tetani,[4] we have been prompted to study the behavior of the bacillus in vivo when proper doses of the drug are administered.

MATERIAL AND METHODS

From November, 1948, to January, 1950, 32 patients suffering from tetanus were admitted to the San Juan City Hospital. Seventeen, in whom repeated cultures for Cl. tetani were made, were selected for the present study. There were 11 white patients, of whom six were men and five women; three Negroes, two men and one woman, and three mulatto men. The youngest was 13 years old and the oldest 82, with an average of 31 years. There were eight patients of 20 or younger, 12 under 30, 14 under 40, 15 under 50, and two over 70.

The approximate incubation period was known in 10 instances: in three it was five days; in one, five to 10 days; in two, 10 to 15 days, and in four, 15 to 21 days. The average was 12.2 days.

The portal of entry was evident in all: in the feet in eight; in the ankle in three; in the leg in four; in the ear in one, and in the neck in one. The nature of the lesion was discovered in all: puncture wounds in six; lacera-

1. (*a*) Abel, J. J.: On Poisons and Disease and Some Experiments with the Toxin of the Bacillus Tetani, Science **79**: 121, 1934. (*b*) Abel, J. J.; Hampil, B., and Jonas, A. F., Jr.: Researches on Tetanus: III. Further Experiments to Prove that Tetanus Toxin is Not Carried in Peripheral Nerves to the Central Nervous System, Bull. Johns Hopkins Hosp. **56**: 317, 1935. (*c*) Abel, J. J.; Firor, W. M., and Chalin, W.: Researches on Tetanus: IX. Further Evidence To Show That Tetanus Toxin Is Not Carried to Central Nervous System by Way of the Axis Cylinders of Motor Nerves, ibid. **63**: 373, 1938. (*d*) Abel, J. J.; Evans, E. A., Jr., and Hampil, B.: Researches on Tetanus: V. Distribution and Fate of Tetanus Toxin in the Body, ibid. **59**: 307, 1936. (*e*) Firor, W. M.; Lamont, A., and Schumacker, H. B., Jr.: Studies on the Cause of Death in Tetanus, Ann. Surg. **111**: 246, 1940. (*f*) Schumacker, H. B.; Firor, W. M., and Lamont, A.: The Therapeutic Use of Antitoxin in Experimental Tetanus, Surgery **8**: 1, 1940. (*g*) Firor, W. M.: The Prevention and Treatment of Tetanus, Am. J. Surg. **46**: 450, 1939. (*h*) Firor, W. M., and Jonas, A. F., Jr.: Researches on Tetanus: VI. Production of Reflex Motor Tetanus by Intraspinal Injection of Tetanus Toxin, Bull. Johns Hopkins Hosp. **62**: 91, 1938.

2. Dubos, R. J.: Bacterial and Mycotic Infections of Man, Philadelphia, J. B. Lippincott Company, 1948, pp. 363-366.

3. Diaz-Rivera, R. S.; Deliz, L. R., and Berio-Suárez, J.: Penicillin in Tetanus: A Clinical Analysis of 59 Cases, J. A. M. A. **138**: 191 (Sept. 18) 1948.

4. (*a*) Weinstein, L., and Wesselhoeft, C.: Penicillin in Treatment of Tetanus: Report of 2 Cases, New England J. Med. **233**: 681, 1946. (*b*) The mephenesin was furnished by E. R. Squibb & Sons.

V 14
1951

tions in two; ulcers in six; a draining abscess of the neck in one; a draining ear in one, and a burn in one.

The disease was classified as generalized tetanus in 15 and cephalic tetanus in two. Fifteen had convulsions, either on admission or afterward. The time between the onset of the disease and the appearance of convulsions was known in 12 cases; in two within the first day; in two within two days; in two within three days; in three within four days; in one within five days; in one within six days, and in one within nine days.

On admission all patients received 100,000 units of tetanus antitoxin intravenously and an equal amount intramuscularly after a negative reaction to a dermal test for sensitivity. After infiltrating the surrounding tissues with 10,000 to 20,000 units of tetanus antitoxin, tissue and other material, including pus when present, were obtained from the portal of entry for anaerobic culture of Cl. tetani in thioglycolate and cooked meat media. No wide or extensive débridement was attempted; the wound was left open, and was covered with sterile gauze. No local medication was tried. Crystalline sodium penicillin G (Squibb) was then administered in doses of 30,000 units intramuscularly every three hours, and the total dose of the drug was not limited. Two thousand to 4,000 cc. of 5% dextrose in isotonic sodium chloride solution was given intravenously in accordance with the patient's needs for hydration, and phenobarbital sodium in doses of 0.13 gm. or more every two or three hours was given hypodermically for the control of convulsions.

TABLE 2.—*Nature and Duration of Lesions, with Percentage of Positive Cultures*

Type of Lesion	Cases	Results of Cultures: Positive	Results of Cultures: Positive, %	Results of Cultures: Negative	Average Duration of Lesions: Positive	Average Duration of Lesions: Negative
Puncture wounds	6	4	66.6	2	10 days	11 days
Ulcers	6	1	16.6	5	8 mo.	4.6 yr.
Lacerations	2	2	100.0	0	21 days	Unknown
Drained abscess	1	1	100.0	0	2 days	Unknown
Otitis media	1	1	100.0	0	16 days	Unknown
Burn	1	1	0.0	1	Unknown	1 mo.
Total	17	9	Av. 63.9	8		

Daily intramuscular injections of 10,000 units of tetanus antitoxin were administered for three consecutive days after admission. Anaerobic cultures from tissue and pus obtained from the portals of entry were made 24, 48, 72, and 120 hours after the initiation of therapy. In one case, numerous cultures were done in a period of 30 days.

RESULTS

There were eight positive and nine negative cultures initially; of the positive, five were negative 24 hours later and thereafter; two were positive at the end of 48 hours; of the latter two, one was negative in 72 hours and the other in 29 days. Of the negative initial cultures, one was reported as positive 48 hours later, but it was negative in 72 hours (Table 1).

Thus, 47% of the cases showed positive cultures on admission; 18% in 24 hours; 18% in 48 hours; 6% in 72 hours, and 6% in 120 hours after the initiation of treatment with penicillin. Sixty-two per cent of the positive cultures were negative within one day, 75% within the second day, and 87.5% within the third day (Table 1).

The average duration of lesions yielding positive cultures was 12.5 days; of those with negative cultures, more than two years. It appears from this that the older the lesion the more difficult it is to recover Cl. tetani. Extensive ulcers and a burn covering a large area failed to yield positive cultures, while in the well-localized lesions the bacillus was easily found. However, there were two instances of deep puncture wounds in the sole of the foot with negative cultures. Demonstration of positive cultures was as follows: lacerations yielded 100%; suppurating lesions (an incised abscess of the neck and an acute otitis media), 100%; puncture wounds, 66.6%, and the ulcers and a burn 14.3%. It can be concluded that recent, well-localized, small, shallow, suppurating lesions are richer and more available sources of Cl. tetani than are extensive, chronic, or very deep lesions. The taking of material for culture from multiple areas in extensive lesions may have led to positive cultures in some of our cases, since in these the exact point where the bacillus was multiplying was very difficult to ascertain. Débridement with excision of tissue from the very depths of the puncture wounds may have helped in the isolation of Cl. tetani (Tables 2 and 3).

Cultures for Cl. tetani remained positive for 29 days in one patient. A summary of the clinical course is included to illustrate the many factors involved in eradicating an infection with this organism.

TABLE 1.—*Summary of Nine Cases with Positive Cultures for Clostridium Tetani*

Case	Age, Yr.	Sex	Race	Portal of Entry	Site of Lesion	Duration of Lesion	Cultures on Admission	Additional Cultures: Hours: 24	48	72	120	29 Days	Local Penicillin	Pulmonary Complications	Outcome
1	14	M	M	Puncture wound	Ankle	4 days	+	−	−	−	−	−	No	No	Recovery
2	50	F	W	Ulcer	Ankle	8 mo.	+	+	+	−	−	−	No	No	Recovery
3	17	M	W	Laceration	Toe	21 days	+	−	−	−	−	−	No	No	Recovery
4	29	M	W	Puncture wound	Foot	4 days	+	−	−	−	−	−	No	Yes	Recovery
5	20	M	M	Laceration	Toe	21 days	+	+	−	−	−	−	No	No	Recovery
6	19	M	N	Otitis media	Ear	16 days	+	−	−	−	−	−	No	No	Recovery
7	38	M	W	Puncture wound	Foot	14 days	+	+	+	+	+	+	Yes	Yes	Recovery
8	19	M	W	Draining abscess	Neck	2 days	+	−	−	−	−	−	No	Yes	Death
9	29	F	W	Puncture wound	Toe	18 days	−	−	+	−	−	−	No	No	Recovery
Averages	26 yr.					12.5 days									Mortality 11%

REPORT OF CASE

CASE 1.—J. S. L., a 38-year-old white, Puerto Rican vegetable vendor, sustained a puncture wound in the sole of his left foot with a rusty shoe nail on April 6, 1949. On April 15 he developed

dysphagia, trismus, and painful spasms of the muscles of the neck, abdomen, and legs. On April 17 frequent generalized convulsions appeared, forcing his admission to the hospital on April 20. His past and family histories were noncontributory. He denied having received tetanus antitoxin or penicillin during, or prior to, his present illness.

Physical examination revealed a well-developed, poorly nourished white man presenting marked rigidity of the cervical muscles and a risus sardonicus. The temperature was 99.2 F., the pulse 120, the respirations 28 per minute, and the blood pressure 120/94. The muscles of the back, abdomen, and legs were markedly spastic, and the patellar, ankle, biceps, and triceps reflexes were hyperactive. A hardened, cornified area about 2 cm. in diameter was found in the sole of the left foot; in the center of this area was a partially healed, small puncture wound draining small amounts of pus. There were frequent generalized convulsions during the examination.

The red blood cell count was 5,160,000 with 103% hemoglobin. The white blood cell count was 11,200 per cubic millimeter, with normal differential values. The urine was normal, except for traces of albumin.

The patient received 100,000 units of tetanus antitoxin intravenously and 100,000 units intramuscularly on admission. He was given phenobarbital sodium in doses of 0.13 gm. intramuscularly every three hours, and 4,000 cc. of 5% dextrose in isotonic sodium chloride solution intravenously every 24 hours. Ten thousand units of tetanus antitoxin were administered intramuscularly for each of three consecutive days. The tissues around the suspected portal of entry were infiltrated with 10,000 units of tetanus antitoxin, and a small piece of the cornified tissue was obtained for culture of Cl. tetani before parenteral administration of 30,000 units of crystalline sodium penicillin G every three hours was initiated.

Because of the severity of the convulsions, on April 22 the patient was started on 50 cc. of 2% solution of mephenesin (tolserol®) intravenously every eight hours.[4b] He exhibited little lasting improvement, in spite of its continuous use for 14 days. On April 24 he developed a dry, hacking cough. On April 25 the temperature rose to 102 F., and there were dullness to percussion, diminished breath sounds, and moist rales over the left lower lung posteriorly. At this time he was started on daily intramuscular 1-gm. doses of streptomycin, for eight days.

On April 26 the spasticity of the muscles had diminished considerably, and the convulsions were milder and less frequent. During the next 10 days the temperature ranged from 100 to 104 F., and the pulmonary findings persisted until May 7. Sedation was stopped on May 18, and penicillin on May 20, but the trismus and rigidity of the neck muscles remained until June 2. The patient was discharged as cured on June 4, 1949.

The results of cultures for Cl. tetani in this patient are presented in Table 4.

From the data presented in this case it can be concluded that parenteral penicillin failed to eradicate enough Cl. tetani in time to check production of tetanus toxin in an amount sufficient to cause serious clinical manifestations. Penicillin was also of no value in preventing the development of aspiration pneumonia, but streptomycin appears to have helped in curing the latter complication.

The fact that the lesion was located in a cornified area with poor blood supply may explain the failure of parenteral penicillin to check the infection with Cl. tetani, since this was not achieved until penicillin was given locally and in heavy doses. The serious manifestations of tetanus in this case suggest that the power of diffusion of tetanus toxin through tissues with a poor blood supply is much higher than that of penicillin, and gives support to the advisability of local use of the drug.

TABLE 3.—*Summary of Eight Cases with Negative Cultures for Clostridium Tetani*

Case	Age, Yr.	Sex	Race	Portal of Entry	Site of Lesion	Duration of Lesion	Local Penicillin, Units	Pulmonary Complications	Outcome
1	17	M	M	Ulcer	Leg	6 yr.	None	No	Recovery
2	18	M	N	Ulcer	Ankle	10 mo.	50,000	No	Recovery
3	73	M	W	Ulcers	Leg	10 yr.	None	Yes	Death
4	13	F	C	Ulcer	Leg	6 wk.	None	No	Recovery
5	23	F	W	Ulcers	Leg	3 mo.	None	No	Recovery
6	39	F	W	Puncture wound	Foot	14 days	20,000	Yes	Death
7	82	M	M	Puncture wound	Foot	8 days	20,000	Yes	Death
8	30	F	W	Burn	Foot	1 mo.	—	—	Recovery
Average age	37 yr.							Mortality	37.5%

TABLE 4.—*Results of Cultures for Clostridium Tetani (Case 1)*

Date	Penicillin, I. M.	Penicillin, Local	Streptomycin, I. M.	Culture
April 20	Yes	None	No	Positive
April 21	Yes	None	No	Positive
April 24	Yes	20,000 units	Yes	Positive
May 1	Yes	20,000 units	Yes	Positive
May 18	Yes	100,000 units	No	Positive
May 19	Yes	None	No	Negative
May 20	Yes	None	No	Negative

Perhaps complete excision of the cornified area would have been a more satisfactory method of treating the local infection, since the localization of the lesion in an area almost devoid of blood and oxygen supply might have contributed to the continued growth of the bacillus.

The amount of toxin fixed by the central nervous system, although sublethal, was large enough to cause serious manifestations. The body defenses were responsible for this patient's recovery, aided by the antibiotics, which checked and prevented secondary infections.

The failure of mephenesin adequately to control convulsions in this patient emphasizes the variable tolerance to the drug. In all probability, heavier doses would have been more effective.

There was one death among the patients with positive cultures. This fatality will be presented in detail to illustrate the dangers of rapid fixation of large amounts of tetanus toxin by the cells of the vital centers of the central nervous system, and the complications that may ensue.

REPORT OF CASE

CASE 2.—A. S., a 19-year-old Puerto Rican laborer, had development of a small abscess of the right side of the neck. The abscess was incised and drained in the surgical dispensary of the San Juan City Hospital on Dec. 19, 1949, and the patient returned to work on the same day. On Dec. 21 he developed pain and stiffness of the jaw, and on Dec. 23 dysphagia and rigidity

V 14
1951

of the cervical muscles. On Dec. 24 the muscles of the back and abdomen were involved, and frequent, generalized, and painful muscle spasms appeared. These increased in severity, forcing his hospitalization on Dec. 25. The past and family histories were noncontributory. He denied receiving penicillin or tetanus antitoxin either before or during his present illness.

On physical examination the patient was found to be in great distress because of marked rigidity of the neck, back, and abdominal muscles, severe trismus, and dysphagia. The temperature was 99 F., the pulse 96, the respirations 30, and the blood pressure 120/80. A dirty-looking, almost completely healed, 1-in. (2.54-cm.) long surgical incision was found in the right submaxillary region. The heart and lungs were normal. There was spasm of the muscles of the abdomen, back, neck, and face. Frequent episodes of transitory, painful, generalized muscle spasms were observed during the examination.

The red blood cell count, hemoglobin, and white blood cell count, as well as the urine, were normal. The blood test for syphilis was negative.

He received 100,000 units of tetanus antitoxin by vein and 100,000 units intramuscularly. Three thousand cubic centimeters of 5% dextrose in isotonic sodium chloride solution were administered intravenously every 24 hours, and phenobarbital sodium, in doses of 0.13 gm., was given intramuscularly at three-hour intervals for the control of convulsions and severe muscle spasms. The wound of the neck was reopened after the infiltration of the surrounding tissues with 10,000 units of tetanus toxoid, and pus and necrotic tissue were obtained for culture of Cl. tetani. Later, treatment was continued with 30,000 units of crystalline sodium penicillin G intramuscularly, every three hours, and 10,000 units of tetanus antitoxin were given daily for three consecutive days. Anaerobic cultures of the pus and necrotic tissue from the portal of entry were repeated 24, 48, and 72 hours after the initiation of penicillin therapy. The culture on admission was reported as positive; those taken later were negative.

Severe muscle spasms continued unabated despite heavy sedation. On Jan. 4 (15 days after onset and 10 days after hospitalization) the temperature rose to 105 F. within a period of 24 hours. On Jan. 5 the patient was delirious, his breathing was rapid, and examination of his chest revealed multiple coarse rales and rhonchi bilaterally. Since it was evident that he had aspirated large amounts of secretions from the upper respiratory tract, suction was tried, but to no avail. On the same day the patient suddenly developed severe cyanosis, the respirations became stertorous and labored, and he died one-half hour later. Death probably was caused by asphyxia resulting from accumulation of large amounts of secretions in the trachea and bronchi, with persistent laryngeal spasm perhaps playing a part. Permission for autopsy was denied.

The fertile media (pus and necrotic tissue) in which Cl. tetani grew and multiplied in this case guaranteed abundant production of tetanus toxin. From the start it was recognized that a large amount of toxin must have been fixed by the vital centers of the central nervous system, leading to a severe case of cephalic tetanus. Cl. tetani had gained entrance through an incised abscess which was almost completely healed on the patient's admission to the hospital. Since aseptic technique was employed by the surgeon in this minor operation, it can be concluded that infection with the tetanus bacillus occurred later, upon exposure to dirt. It is possible that penicillin, administered for two days after operation, might have prevented the disease, since the portal of entry was freed of Cl. tetani within 24 hours after use of penicillin.

The efficiency of penicillin as an antibiotic for Cl. tetani is recognized in this case, but it was useless in the prevention of pulmonary complications. The excessive secretions obstructing the trachea and bronchi, the aspiration penumonia, and the sustained laryngeal spasm would perhaps have been prevented by tracheotomy. Had respiratory paralysis supervened from depression of the respiratory center, as in bulbar poliomyelitis, the use of a respirator or tracheotomy, and suction of the aspirated secretions would have been the procedure of choice.

A case with a rare portal of entry from which Cl. tetani was isolated, and in which penicillin served to eradicate the infection, is hereby presented to illustrate the difficulties of diagnosis and the benefits of early treatment.

REPORT OF CASE

Case 3.—A. T., a 9-year-old male Puerto Rican mulatto, was admitted to the San Juan City Hospital on Feb. 26, 1949. He stated that on Feb. 5 he had fallen against a piece of furniture, traumatizing the side of the left ear and left mastoid region. On Feb. 7 he noticed a dark watery discharge from the left ear. On Feb. 9 he started to complain of severe left earache, and concomitantly the discharge became thick and frankly purulent. Some time later (date not remembered by the patient) he introduced a blunt instrument into his left ear canal for cleansing purposes. On Feb. 23 he developed difficulty in swallowing and stiffness of the jaw; the symptoms persisted until admission. He denied the use of tetanus antitoxin or penicillin during his illness.

Physical examination revealed a well-nourished and well-developed young mulatto, in distress because of trismus and dysphagia, with a temperature of 98 F., pulse rate of 100, respiration rate of 20, and a blood pressure of 120/72. The left ear drum, which was swollen and reddened, presented an inferior perforation with oozing of purulent material. The neck was moderately stiff, and there was marked trismus. Two small, tender lymph nodes were felt in the left submaxillary region. The heart and lungs appeared normal. There was slight involuntary rigidity of the abdominal muscles. The knee and ankle jerks were hyperactive. The red blood cell, white blood cell, and hemoglobin values were within normal limits. The urine was normal.

He was given sulfadiazine in proper doses for the suppurating otitis media, while awaiting the results of an anaerobic culture of the exudate. This was reported positive for Cl. tetani on Feb. 28. By this time the patient presented definite spasticity of the abdominal muscles and complained of oppression of the chest. He was given 200,000 units of tetanus antitoxin intramuscularly in repeated, divided doses within a period of 36 hours, because of a positive dermal test for sensitivity, and 30,000 units of crystalline sodium penicillin G intramuscularly every three hours. Another culture taken 24 hours after initiation of antibiotic therapy was reported as negative.

On March 3 the abdominal rigidity and trismus persisted after three consecutive daily doses of 10,000 units of tetanus toxoid. On March 4 convulsions set in, and he began to receive 0.13 gm. of phenobarbital sodium intramuscularly every three hours. Definite improvement followed, and by March 6 the trismus and rigidity of the neck had almost completely disappeared. On March 14 x-ray studies revealed a left acute mastoiditis for which penicillin was continued seven more days. The patient was discharged on March 21, 1949, and has been successfully followed up by the otorhinolaryngologists.

This case is unique because of (1) the rarity of the portal of entry of Cl. tetani; (2) the mode of infection, probably by the patient's introduction of a contaminated instrument into his ear; (3) the difficulties encountered in the clinical diagnosis; (4) the methods used for a definite diagnosis, and (5) the rapid checking of the multiplication of the bacillus by means of penicillin. Unfortunately, the incubation period was not definitely known, but it appeared to be less than 14 days. The interval between the onset of trismus and convulsions was prolonged. Although the possibility of tetanus was suspected on admission, it was the recovery of the bacillus that confirmed the diagnosis, since any acute inflammatory process of the mouth and throat could have accounted for the dysphagia and trismus. Bacteriologic

diagnosis was not obtained until the picture of tetanus was evident, but it seems that the amount of toxin fixed by the central nervous system was enough to cause only moderately severe symptoms. Rapid recovery ensued in a case that, if not properly treated, would have culminated in death. The effect of penicillin as an antibiotic for Cl. tetani is clear. (We consider crystalline potassium penicillin G more stable than the salt.) The infection was probably limited to the middle ear, not extending to the mastoid cells. It is possible that the free drainage and availability of oxygen in this site may have deferred the growth of Cl. tetani.

Of the six patients in this series in whom pulmonary complications developed, four (60%) died. All the measures used in prevention and treatment of these complications failed to avert a fatal outcome in these cases. The two patients older than 70 (one was 73, the other 82 years old) died, emphasizing the poor prognosis for tetanus among the aged.

The gross mortality rate was 23.5%, in spite of (1) use of penicillin, (2) efficient eradication of the focus of infection of Cl. tetani without débridement, (3) large amounts of tetanus antitoxin, and (4) good sedation, efficient hydration, and adequate electrolytic balance. Failure to maintain the upper respiratory passages unobstructed by tracheotomy and the use of a respirator may account for some of the fatalities. It must be emphasized that the gross mortality rate in this small series is similar to that (20.3%) reported from this same institution [3] under essentially similar conditions, but with emphasis on surgical débridement.

COMMENT

Cl. tetani is a saprophyte and an obligate anaerobe, whose multiplication in vivo is governed, among other factors, by the presence of necrotic tissue, anaerobic conditions, pyogenic organisms, and small amounts of calcium salts that lower the oxidation-reduction potential of tissue.[5] The bacillus is not invasive, and frequently the infection remains localized in a small area. One milligram of purified and crystallized tetanus toxin contains 6,400,000 lethal mouse doses, so that its toxic potency is second only to that of Clostridium botulinum.[6] Fixation of a certain amount of this powerful toxin by the cells of the central nervous system leads invariably to death. (For further description you are referred to Firor and others,[1e] Schumacker and others,[1f] Firor,[1g] and Firor and Jonas [1h]).

It is generally recognized that the local and general symptoms of tetanus are caused by toxemia, at times overwhelming, which occurs when multiplication of Cl. tetani is rapid or prolonged. In those circumstances, there is marked diffusion of toxin and massive fixation by the cells of the central nervous system. The most important therapeutic indications, therefore, seem to be neutralization of free toxin and detention of its production.

Neutralization of free toxin does not eliminate the possibility of further production, however, and treatment with repeated daily injections of antitoxin is not always safe, since the dangers of antitoxin sickness impose limitations on the duration of treatment.

The ideal procedure would be to eradicate the source of toxin. This can be done in some instances by wide excision of the portal of entry, when accessible. Not all portals of entry, however, are easily accessible: for example, those located in the mouth, rectum, or anus. Others, like the middle ear, cannot be excised. Some remain undiscovered. Many would require major surgical intervention, as in endometritis, extensive chronic ulcers or lacerations, large abscesses resulting from intramuscular injections, osteomyelitis, etc. In still other cases, numerous lesions are suspected, but the one responsible for growth of Cl. tetani cannot be localized with ease. In more than 100 cases of tetanus we have found that a little over 50% of the portals of entry are approachable for débridement, and that the procedure per se does not eliminate the infection in every case.

Other measures for preventing multiplication of Cl. tetani should be sought for. The data presented herewith tend to demonstrate that penicillin is a powerful antibiotic against the tetanus bacillus and that eradication of the infection can be attained, in the majority of instances, within 24 hours after initiation of parenteral therapy. They also suggest that its use locally in large doses may be of benefit.

This is substantiated by the disappearance of Cl. tetani from ulcers, lacerations, a draining ear, and an incised abscess within a period of not more than three days after institution of antibiotic treatment without débridement. In only one instance was there evident need for wide excision of the affected tissues, and even in this case favorable results were achieved by local injection of moderately large doses of penicillin in an area almost devoid of blood supply.

Another action of penicillin that may help to retard the growth of the tetanus bacillus is its powerful bacteriostatic effect against gram-positive cocci, responsible for the formation of pus, which favors multiplication of the bacillus.

It appears that administration of penicillin early in the course of the disease can check its progress by eliminating production of toxin, thus preventing further fixation of toxin by the central nervous system. With an antibiotic capable of rapid and efficient bacteriostasis it might be possible to avoid administering antitoxin, aside from that given initially to neutralize free toxin in the body, and perhaps even to avoid débridement. If the presence of pyogenic organisms at the portal of entry of the tetanus bacilli is as important for the latter's action as is generally accepted, then it is even possible that such an antibiotic might be useful in tetanus prophylaxis. Whether or not penicillin can fulfill these demands must await further investigation.

While penicillin is useless in the prevention of the diffusion or fixation of tetanus toxin, it does prevent certain bacterial pulmonary complications and cures others. Together with streptomycin, it aided in the control and cure of aspiration pneumonia in one of our patients. Our experience with this case and others,

5. Fildes, P.: Tetanus: IX. The Oxidation-Reduction Potential of the Subcutaneous Tissue Fluid of the Guinea-Pig; Its Effect on Infection, British J. Exper. Path. **10**: 197, 1929.

6. Pickett, M. J.; Hoeprich, P. D., and Germain, R. O.: Purification of High Titer Tetanic Toxin, J. Bact. **48**: 515, 1945. Pillemer, L.; Wittler, R., and Grossberg, D. B.: The Isolation and Crystallization of Tetanal Toxin, Science **103**: 615, 1946.

V 14
1951

although limited, is that development of pneumonia during penicillin therapy in the course of tetanus is an indication for use of streptomycin, since, in all probability, the infection is due to gram-negative bacteria, amenable to therapy with streptomycin.

Antibiotics will not prevent death from mechanical obstruction of the respiratory passages, respiratory failure arising from depression of the respiratory center, or asphyxia resulting from prolonged laryngeal spasm. These complications can be prevented only by mechanical means, such as suction of the tracheal and bronchial secretions, tracheotomy, and use of the respirator. There is evidence to suggest that deaths are preventable by these means, even when lethal doses of toxin have been fixed by the cells of the central nervous system.[7]

SUMMARY AND CONCLUSIONS

Repeated anaerobic cultures for Clostridium tetani, taken from suspected portals of entry in 17 cases of tetanus, before and after administration of penicillin, yielded the following results: (1) eight positive and nine negative cultures prior to onset of treatment; (2) complete disapearance of Cl. tetani in five within 24 hours, in six within 48 hours, and in seven within 72 hours; (3) persistently positive cultures for 29 days in one instance, complete sterilization being achieved only after local administration of penicillin; (4) one instance in which a culture that was positive 48 hours after initiation of penicillin therapy became negative in 72 hours.

Recent, well-localized, small, shallow, suppurating lesions appear to be better sources of Cl. tetani than extensive, chronic, or deep lesions.

Penicillin seems to be a useful adjuvant in the management of tetanus. The beneficial effects can be attributed to its antibiotic property against Cl. tetani, causing its eradication from the portal of entry within one to four days after initiation of parenteral administration.

The elimination of the growth and multiplication of Cl. tetani prevents the production, diffusion, and fixation of tetanus toxin, and indirectly may help in preventing the progress of symptoms.

The bacteriostatic properties of penicillin justify its use in every case of tetanus, both parenterally and locally, when the portal is accessible. Its use may obviate débridement, especially in cases with suppuration or extensive lesions.

Penicillin is useful in the prevention and cure of many secondary bacterial pulmonary infections. Streptomycin is helpful in treatment of pulmonary complications caused by gram-negative bacteria. The danger, prevention, and management of pulmonary complications from mechanical obstruction of the air passages are reemphasized.

Administration of repeated doses of antitoxin after the disappearance of Cl. tetani from the portal of entry is probably a waste of time.

Neutralization of free toxin with tetanus antitoxin; administration of penicillin, even without proper débridement of the portals of entry; proper sedation; efficient hydration and electrolyte balance; proper nutrition, and maintenance of unobstructed air passages by mechanical means, including suction, tracheotomy, and use of a respirator—all these are considered to be lifesaving measures in the management of tetanus.

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7. Turner, V. C., and Galloway, T. C.: Tetanus Treated as Respiratory Problem, Arch. Surg. **58**: 478 (April) 1949.

ACQUIRED TOXOPLASMOSIS

REPORT OF SEVEN CASES WITH STRONGLY POSITIVE SEROLOGIC REACTIONS

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Since the introduction of reliable, quantitative serologic methods,[1] cases of congenital toxoplasmosis have been diagnosed with increasing frequency. However, knowledge of the epidemiology and the pathogenesis of the disease is still deficient. It is known that the fetus is infected in utero because symptoms are manifest at birth and because mothers of children with congenital toxoplasmosis have in all cases shown strongly positive serologic reactions. Nevertheless, the majority of mothers have appeared healthy, without any history of definite illness during pregnancy; on postnatal examination, no characteristic clinical signs of disease have yet been demonstrated. Consequently, we must assume the existence of a mild form of acquired toxoplasmic infection, or perhaps even a form not apparent clinically.

Besides such subclinical forms, there have been thus far only few known cases of acquired toxoplasmosis in which significant clinical signs have been present and in which the diagnosis has been verified through the isolation of Toxoplasma in animal-transmission experiments. Sabin [2] describes acute, nonsuppurative encephalitis in two children, one of whom died while the other recovered; and Pinkerton and Henderson [3] report two adult cases of an acute, fatal, systemic infection with fever, maculopapular rash, and atypical pneumonia, which simulated diseases of the typhus-spotted fever group.

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In the preparation of this paper case records from the Blegdamshospitalet, Copenhagen, and from the outpatient department of the Rigshospitalet, University of Copenhagen, as well as information concerning the home treatment of the patients, were used with the permission of Drs. H. C. A. Lassen, Eggert Møller, T. Bennike, and V. Jacobsen.

1. Sabin, A. B., and Feldman, H. A.: Dyes as Microchemical Indicators of a New Immunity Phenomenon Affecting a Protozoon Parasite (Toxoplasma), Science **108**: 660-663, 1948. Warren, J., and Russ, S. B.: Cultivation of Toxoplasma in Embryonated Egg: An Antigen Derived from Chorioallantoic Membrane, Proc. Soc. Exper. Biol. & Med. **67**: 85-89, 1948. Sabin, A. B.: Complement Fixation Test in Toxoplasmosis and Persistence of the Antibody in Human Beings, Pediatrics **4**: 443-453, 1949.

2. Sabin, A. B.: Toxoplasmic Encephalitis in Children, J. A. M. A. **116**: 801-807 (March 1) 1941.

3. Pinkerton, H., and Henderson, R. G.: Adult Toxoplasmosis: A Previously Unrecognized Disease Entity Simulating the Typhus-Spotted Fever Group, J. A. M. A. **116**: 807-814 (March 1) 1941.

Since no effective specific treatment is known and since the severe lesions produced by the Toxoplasma are irreparable, the detection of the acquired disease in pregnant women would seem to be a task of primary importance.

The purpose of the present study has been to try to diagnose acquired toxoplasmosis by serologic methods such as the Sabin-Feldman serum dye test and complement fixation tests. With these tests I hoped to be able to recognize generally mild symptoms, which could be suspected as being due to toxoplasmic infection, so that further serologic investigation in similar cases might be undertaken for possible confirmation of suspicions. First, tests were made in a number of patients with fever of unknown origin. As a result, positive seroreactions for toxoplasmosis were demonstrated in a patient with generalized lymphadenopathy accompanied by fever.[4] Then other patients with "adenitis" or suspected mononucleosis were examined, and dye tests and complement fixation tests were positive in the following seven cases, five of which occurred in two familial outbreaks.

REPORT OF CASES

CASE 1.—*Clinical History.*—F. B., a boy aged 6 years, had been in good health previous to Aug. 15, 1950. For four or five days there was a nonirritant affection of the skin, consisting of close-set, pinhead-sized, whitish papules, localized to the forehead, cheeks, and chin. He had felt tired and unwell, and had had signs of a cold, in the form of serous coryza, for about two days when his temperature rose to 39.5 C (103.1 F), on Sept. 2. His general condition was poor, but no headache, nausea, giddiness, or convulsions occurred. He had no pain in the left hypochondrium, no photophobia, and no pains in the joints.

Results of Examination.—In addition to moderate congestion of the fauces unaccompanied by exudate and doubtful rigidity of the neck, the physical examination on Sept. 2 showed a generalized lymphadenitis with numerous painless, firm, discrete lymph nodes, varying in size from a pea to a hazelnut without any periglandular edema. The enlarged glands were in the occipital region on either side of the neck, particularly along the posterior-inferior border of the sternocleidomastoid muscle, in the axillas, and in the groins. Physical examination showed no other signs. Particularly, no changes in the skin or jaundice were observed. No abnormality was found in the respiratory system; there was no enlargement of spleen or liver; no neurological signs were present.

An electrocardiogram was normal. In roentgenologic examination of the skull no intracerebral calcifications were seen. Roentgenologic examination of the chest revealed the right hilus normal and the left hilus enlarged, probably due to adenitis. Ophthalmoscopy showed no signs of chorioretinitis.

Subsequent Course.—On Sept. 3 the temperature ranged from 38.5 to 38.7 C (101.3 to 101.7 F). It remained at about 38 C for the next two days and then returned to normal. On Sept. 6 aphthous stomatitis developed, localized to the palate, the buccal mucous membrane, and the lips. It subsided in the course of five or six days. By Sept. 3 or 4 the patient's general condition had improved; and he was ambulatory on Sept. 8, although still tired, pale, and irritable. He had lost 2 kg. (5 lb.) in weight. A fortnight after the onset of the disease he was completely well and mentally normal. There were no physical signs apart from the generalized adenitis, which remained unchanged as late as six weeks after the onset of the disease. Except for bed rest at home, no treatment had been instituted.

Laboratory Findings: The hemoglobin value was 90% on Sept. 16 and 95% on Oct. 19. The sedimentation rate (Westergren method) was 5 mm. per hour on Sept. 16 and 3 mm. on Oct. 19. The leukocyte count was 7,500 on Sept. 7; it was 9,700 on Sept. 16 and 8,300 on Oct. 19. The differential counts on Sept. 7, Sept. 16, and Oct. 19 were as follows: unsegmented, 9%, 6.5%, and 2%, respectively; segmented neutrophils, 14.5%, 16.5%, and 18%; eosinophils, 3%, 9.5% and 8%; basophils, 0.5% on Sept. 7, none on Sept. 16 and Oct. 19; large lymphocytes, 16.5%, 18%, and 6.5%; small lymphocytes, 50.5%, 45%, and 59%; monocytes, 5.5%, 4.5%, and 6.5%; plasma cells 0.5% on Sept. 7, none on Sept. 16 and Oct. 19. Many atypical lymphocytes of somewhat similar appearance to those seen in mononucleosis were noted.

The Wassermann reaction was negative. Paul-Bunnell tests made on Sept. 7, Sept. 16, and Oct. 19 were negative. The antistreptolysin titer on Oct. 19 was normal.

Tests for Toxoplasmosis: On Sept. 20 an occipital lymph node the size of a bean was removed. Half the node was ground in a mortar with Tyrode's solution and injected intracerebrally into six mice. All survived for four weeks, and no Toxoplasma could be isolated after two further passages in mice. The microscopic examination of the lymph node showed hyperplasia especially involving the reticular cells in the follicular centers; these cells were large and pale, with large nuclei which stained intensely. A great number of typical mitoses but no abnormal nuclei were seen. Among the reticulum cells there were intensely bluish-black stained, well-defined granules of varying shape and size, occurring partly separately and partly in clusters, which should presumably be considered nuclear debris resulting from a chromatolysis. Occassionally an eosinophilic leukocyte was seen. Toxoplasma-pseudocysts were not demonstrated, and there were no signs of specific inflammation or malignancy. Sabin-Feldman dye test titers on Sept. 7, Sept. 16, and Oct. 19 were 1:1,600; 1:2,400; and 1:6,250. Complement fixation titers on Sept. 16 and Oct. 19 were 1:128 and 1:128.

Environment.—The patient was living in Copenhagen; the family kept no domestic animals; and the flat was not infested with rats or mice. During a vacation on a farm from June 24 to Aug. 6 he had played with a dog and a cat. Except for transient purulent conjunctivitis in the cat, the animals had shown no signs of disease, in particular, no diarrhea. On Nov. 6 an examination of the cat for Toxoplasmosis showed a dye test titer of 1:100, whereas the reaction in the dog was negative (< 1:10). The cat died a week later, but there was no opportunity for a further examination.

An examination of the family on Sept. 16 revealed that the patient's father had weak positive reactions. (The dye test was 1:50 and was unchanged on Oct. 20. The complement fixation titer was 1:2 and also remained unchanged on Oct. 20.) On the other hand, the patient's mother and grandparents had negative reactions, and physical examination showed nothing abnormal, in particular, no enlargement of lymph nodes. Serologic tests for Toxoplasmosis were strongly positive in a sister (Case 2) and in a playmate (Case 3).

CASE 2.—*Clinical History.*—H. B., a girl aged 3 years, had been in good health, except for diarrhea and a temperature to 38.5 C (101.3 F) of 24 hours' duration on June 27, 1950. About Sept. 7, concurrent with her brother's illness (Case 1), she had a cold with serous coryza and a slight, dry cough. There was no fever; her general health remained quite unaffected; and her appetite was good. No headache, eye symptoms, pain in the left side, or pains in the joints occurred.

Results of Examination.—In addition to slight reddening of the fauces, the physical examination on Sept. 7 showed only a generalized adenitis with numerous painless, firm, discrete lymph nodes, that varied in size from a pea to a hazelnut at the angle of the jaw, along the sternocleidomastoid muscle, and in the axillas and groins. On Sept. 30 the generalized adenitis remained unchanged. There were no changes in the skin, no jaundice, no abnormality in the respiratory system, no enlargement of spleen or liver, no neurological signs.

An electrocardiogram was normal. Roentgenologic examination of the skull showed no intracerebral calcifications. Roentgenologic examination of the chest revealed nothing abnormal. Ophthalmoscopy disclosed nothing abnormal. There were no signs of chorioretinitis.

Laboratory Findings: The hemoglobin value was 73% on Sept. 16 and 69% on Oct. 19. The sedimentation rate was 8 mm. per hour on Sept. 16 and 11 mm. on Oct. 19 (Westergren method). The leukocyte count was 9,300 on Sept. 7, 9,000 on

4. Siim, J. Chr.: Epidemiological Aspects of Toxoplasmosis, read before the 6th International Congress of Pediatrics, Zürich, Switzerland, July, 1950.

V 14
1951

Sept. 16, and 9,500 on Oct. 19. The differential counts on Sept. 7, Sept. 16, and Oct. 19 were as follows: unsegmented neutrophils, 8.5%, 9%, and 4.5%, respectively; segmented neutrophils, 34%, 28.5%, and 45%; eosinophils, 2%, 3%, and 2%; large lymphocytes, 7.5%, 7%, and 4.5%; small lymphocytes, 42.5%, 50%, and 42.5%; monocytes, 5.5%, 2.5%, and 1.5%. The Wassermann reaction was negative. Paul-Bunnell tests on Sept. 7 and Oct. 19 were negative. The antistreptolysin titer on Oct. 19 was 1:250.

Tests for Toxoplasmosis: Dye test titers on Sept. 7, Sept. 20, and Oct. 19 were 1:800, 1:2,000 and 1:6,250, respectively. Complement fixation titers on Sept. 7, Sept. 16, and Oct. 19 were 1:128, 1:128 and 1:128.

CASE 3.—J. M., a boy aged 15, had spent his summer vacation from June 24 to Aug. 6, 1950, with patients F. B. and H. B. (Cases 1 and 2). He had Little's disease but was otherwise in good health. He had displayed no symptoms of any kind. Physical examination on Sept. 7 showed a generalized adenitis with painless, firm, discrete nodes the size of hazelnuts in the neck, axillas, and groins. There were no other abnormalities except the signs of Little's disease.

Laboratory Findings: The hemoglobin value was 94% on Sept. 20. The sedimentation rate was 9 mm. per hour (Westergren method). The leukocyte count was 7,500. The differential count was unsegmented leukocytes, 11.5%; segmented leukocytes, 25.5%; eosinophils, 3.5%; large lymphocytes, 7.5%; small lymphocytes, 47.5%; monocytes, 4.5%. There were a number of slightly atypical lymphocytes with increased basophilia of the cytoplasm. The Wassermann reaction was negative. The antistreptolysin titer was normal on Oct. 28. Paul-Bunnell tests on Sept. 20 and Oct. 28 were negative.

Tests for Toxoplasmosis: Dye test titers on Sept. 20 and Oct. 28 were 1:1,250 and 1:6,250. Complement fixation titers on Sept. 20 and Oct. 28 were 1:128 and 1:64.

CASE 4.—*Clinical History.*—R. P., a girl aged 8 years, had been in good health previously to the disease for which she was admitted to the hospital. Since the beginning of October, 1950, the patient had complained of great fatigue and had had a slight, dry cough and serous coryza. On Oct. 6 she had thin, mucous diarrhea without any admixture of blood, but with as many as 10 stools in the 24 hours. The temperature, which was not taken until Oct. 12, fluctuated between 37.5 and 40.2 C (99.5 and 104.4 F) for the next fortnight. There had been no headache, disturbances of vision, neurological signs, articular affections, or urinary symptoms. The patient was first seen by a physician on Oct. 20, and was then sent to the hospital.

Results of Examination.—The patient was pale and undernourished. The temperature was 38.3 C (100.9 F). There was no exanthema or jaundice. The fauces were slightly reddened, but there was no exudate. Ophthalmoscopy showed nothing abnormal. There were no signs of chorioretinitis. In auscultation of the lungs, a few dry rales, which disappeared when the patient coughed, could be heard inferiorly on both posterior surfaces. There was slight diffuse tenderness in the abdomen but no enlargement of liver or spleen. There was doubtful rigidity of the back, but not of the neck. Reflexes were normal. In the neck, in both axillas, and in the groins a number of painless, discrete, firm lymph nodes a little larger than hazelnuts could be felt.

Roentgenologic examination of the chest on Oct. 23 revealed irregular infiltration and slight pleural density at the base of the right lung. The right hilus was considerably enlarged. In the left hilus there was a small calcification. On Oct. 31 only a slight pleural density remained. Roentgenologic examination of the skull showed no intracerebral calcifications.

Laboratory Findings: The hemoglobin value was 98% on Oct. 25 and 100% on Nov. 11. The erythrocyte count on Nov. 11 was 4,730,000 and the color index was 0.99. The sedimentation rate was 12 mm. per hour Oct. 28 and 3 mm. per hour Nov. 15 (Westergren method). Leukocyte counts were 16,200 on Oct. 23; 5,600 on Nov. 11; and 9,400 on Nov. 18. Differential counts on Oct 23, Nov. 11, and Nov. 18 were as follows: unsegmented, 23%, 20%, and 8%, respectively; neutrophil leukocytes, 32%, 18%, and 28%; eosinophils, 6%, 5%, and 11%; large lymphocytes, 20%, 12%, and 15%; small lymphocytes, 16%, 38%, and 35%; monocytes, 3%, 7%, and 3%. On Oct. 23 the large lymphocytes were atypical, closely resembling those seen in mononucleosis.

The spinal fluid was clear, the protein content was normal, and there were 3 leukocytes per cubic millimeter; and no erythrocytes. There was no albumin in the urine. The Wassermann reaction was negative. Paul-Bunnell tests on Nov. 15 and Jan. 30 were negative. The antistreptolysin titer was normal on Nov. 15. Cold agglutinin tests on Oct. 28 and Nov. 6 were negative. Agglutination-lysis test for leptospirosis and Widal's reaction were negative. There were faint reactions with Salmonella Senftenberg-Simsbury H-antigen, 1:10, and with Bacillus dysenteriae Flexner type 1a, 1:25 (50); but no diagnostic importance can be attributed to these reactions. Examination of stools showed no pathogenic intestinal bacteria. Moro's and Mantoux's tests were negative.

Tests for Toxoplasmosis: Dye test titers on Oct. 28, Nov. 15, and Jan. 30 were 1:5,000; 1:6,250; and 1:2,500, respectively. Complement-fixation titers on Oct. 28, Nov. 14, and Jan. 30 were 1:128, 1:128, and 1:64, respectively.

Course.—The temperature remained elevated for three days, with a maximum reading of 39 C (102.2 F), and then returned to normal. The cough abated in eight days, and the stools became normal. The patient became ambulatory on Nov. 2 and was discharged on Nov. 21 for a stay in the country. On discharge she complained of great fatigue.

At follow-up examination on Jan. 30 it was learned that the patient had been attending school for about one month and felt less fatigued. The polyadenitis persisted, but the lymph nodes were now only a little larger than peas.

Environment.—The patient was living in Copenhagen. The family kept no domestic animals, and the flat was not infested with mice or rats. She had spent her summer vacation on a farm in the month of July and could not recall any insect stings.

Examination of her parents and of a 4-year-old brother and a 7-year-old sister showed nothing abnormal. There was no enlargement of lymph nodes, and the serologic tests for toxoplasmosis were negative. However, in a 6-year-old brother (Case 5) the reactions were strongly positive.

CASE 5.—*Clinical History.*—J. P., a boy aged 6 years, brother of patient R. P. (Case 4) had had no fever, catarrh, headache, disturbances of vision, exanthema, diarrhea, stitch in the left side, or pains in the joints during the previous year. His general health had been good. No insects' stings had been noticed.

Results of Examination.—In addition to serous coryza, the physical examination on Nov. 16, 1950, showed glands the size of hazelnuts at the angle of the jaw and smooth, painless lymph nodes a little larger than peas in the axillas and groins. (At follow-up examination on Jan. 30 the lymph nodes were reduced to pea-size.) Roentgenologic examination of the skull revealed no intracranial calcifications. Roentgenologic examination of the chest showed nothing abnormal. Ophthalmoscopy disclosed no signs of chorioretinitis.

There were no changes in the skin or jaundice, no enlargement of liver or spleen, and no neurological signs.

Laboratory Findings: The sedimentation rate was 3 mm. per hour (Westergren method). The leukocyte count was 11,900. The differential count was unsegmented, 3%; segmented, 48%; eosinophils, 4%; large lymphocytes, 14%; small lymphocytes, 24%; monocytes, 4%. The urine contained no albumin. The Wassermann reaction was negative. Paul-Bunnell tests on Nov. 18 and Jan. 30 were negative. Moro's test was negative, and the antistreptolysin titer was normal.

Tests for Toxoplasmosis: Dye test titers on Nov. 14 and Jan. 30 were 1:2,500 and 1:1,250, respectively. Complement-fixation titers on Nov. 14 and Jan. 30 were 1:128 and 1:128.

CASE 6.—*Clinical History.*—T. H., a boy aged 9 years, had been in good health previous to early October, 1950, when he began to complain of increasing fatigue. He would not play as usual, lost his appetite, and had a stitch below the left costal margin. On Oct. 25 his mother noticed a marked enlargement of the nodes on either side of the neck and thought that he had mumps. She later noticed enlarged nodes in the groins also. The temperature, which was not taken until Nov. 4, was elevated during the next fortnight, fluctuating between 37.3 and 39.6 C (99.1 and 103.3 F). The patient lost weight, but there were no rigors, headache, giddiness, nausea, disturbances of vision,

catarrh, diarrhea, or pains in the joints. On admission to the hospital Nov. 18 he complained of fatigue and slight pain on swallowing.

Results of Examination.—The patient was tired, pale, and undernourished. The temperature was 37.9 C (100.2 F). The left submandibular gland was the size of a pea, and there were painless, discrete, firm, pea-sized lymph nodes in the neck (particularly on the left side), in both axillas, and in the groins. There were no changes in the skin or jaundice; no reddening of the fauces; no enlargement of liver or spleen; no neurological signs. As the temperature was normal the day after admission the patient was discharged. During the next month he still complained of fatigue; but his appetite was good, and he attended school. At follow-up examination on Jan. 4 the lymph nodes were still pea-sized.

Roentgenologic examination of the skull showed no intracerebral calcifications. Roentgen examination of the chest on Nov. 20 revealed slightly enlarged hilus shadows. It was also thought that the contours of enlarged lymph nodes could be distinguished. On Feb. 6 the chest was normal. Ophthalmoscopy showed no signs of chorioretinitis.

Laboratory Findings: The hemoglobin value was 90%. The erythrocyte count was 5,490,000. The color index was 0.78. The sedimentation rates on Nov. 20 and Feb. 6 were 102 and 6 mm. per hour (Westergren method). The leukocyte count on Nov. 20 was 4,800. The differential count was unsegmented, 7%; segmented, 53%; large lymphocytes, 9%; small lymphocytes, 30%; monocytes, 1%.

The urine contained no albumin. The Wassermann reaction was negative. Paul-Bunnell tests on Nov. 23 and 30 were negative, and Widal's reaction was negative. The antistreptolysin titers on Nov. 20, Nov. 30, and Jan. 4 were 1:700, 1:360 and 1:90. Moro's test was negative.

Tests for Toxoplasmosis: Dye-test titers on Nov. 21, Nov. 30, and Jan. 4 were 1:6,250; 1:6,250; and 1:1,250. Complement fixation titers on Nov. 30 and Jan. 4 were both 1:64.

Environment.—The patient was living in Copenhagen, and the flat was not infested with mice or rats. The family kept a cat, which had not displayed any signs of disease. Tests for toxoplasmosis in the cat on Nov. 30 were negative.

The patient had been away on vacation from July 2 to Aug. 12 and during that time had been in contact with animals, including a cat and a dog. He stated that he had been stung by gnats there.

Physical examination of his mother and three sisters and brothers (8, 7, and 4 years old) showed nothing abnormal. There was no enlargement of lymph nodes, and the serologic reactions were negative.

CASE 7.—*Clinical History.*—G. H., an unmarried woman aged 20 years, previously in good health, noticed enlarged, painless nodes in her right armpit in mid-October, 1950. She did not seek medical advice until the end of November. Her physician found an enlarged gland the size of a hazelnut at the angle of the jaw on the left side and well-defined, painless lymph nodes a little larger than hazelnuts in the right axilla. A fortnight later there were enlarged nodes in the left axilla also. Except for marked fatigue and nausea, the patient had no complaints. There had been no headache, giddiness, disturbances of vision, rigors, tonsillitis, catarrh, pains in the joints, gastrointestinal or urinary symptoms, or loss of weight. Menstruation was regular, the last onset having been on Dec. 11, when expected.

Results of Examination.—On Dec. 20 physical examination showed a painless, well-defined gland the size of a hazelnut at the angle of the jaw on the left side and similar isolated glands in the axillas; there was no adenitis in the neck or groins. There were no other abnormalities, particularly no changes in the skin or jaundice. The breasts were normal. The respiratory system showed nothing abnormal. There was no enlargement of liver or spleen, and there were no neurological signs.

Ophthalmoscopy, an electrocardiogram and roentgenologic examination of the chest and skull revealed nothing abnormal. A nonpathological calcification was found in the pineal body.

When examined again on Jan. 15 the patient was still tired. She had not had to remain in bed, but had worked at the office, only periodically and with difficulty. There was enlargement of the submandibular nodes on either side and of the submental nodes. A lymph node the size of a hazelnut could now also be demonstrated in each groin. Apart from iron therapy she had been given no treatment.

Laboratory Findings: On Dec. 18, Jan. 15, and Jan. 29 the hemoglobin values were 84%, 82% and 83%, respectively. The erythrocyte counts on Dec. 20 and Jan. 29 were 3,540,000 and 3,830,000. The color indexes were 1.05 and 1.07. There were 237,000 platelets on Dec. 20 and 178,000 on Jan. 29. The sedimentation rate (Westergren method) was 9 mm. per hour on Dec. 18 and 4 mm. on Jan. 15. The leukocyte counts on Dec. 11, Dec. 20, Jan. 15, and Jan. 29 were 3,960; 6,240; 5,040; and 5,720, respectively. The differential counts on these dates were as follows: neutrophil leukocytes, 55%, 67%, 72%, and 70%; eosinophils, 1%, 0%, 0%, and 3.33%; lymphocytes, 42%, 29%, 26.33%, and 26%; monocytes, 2%, 4%, 1.66%, and 0.66%.

The urine contained no albumin. The Wassermann reaction was negative. Paul-Bunnell reactions on Dec. 18 and Jan. 15 were negative. The antistreptolysin titer on Dec. 20 was normal.

Tests for Toxoplasmosis: Dye test titers were 1:1,250 on Dec. 11; 1:1,250 on Dec. 20; 1:6,250 on Jan. 15; and 1:1,250 on Jan. 29. Complement-fixation titers were 1:32 on Dec. 11; 1:64 on Dec. 20; 1:128 on Jan. 15 and 29.

Environment.—Examination of the patient's mother showed negative reactions for toxoplasmosis; there were no other members of the family. There were no domestic animals in the house, and rats or mice had not been observed. There were, however, numerous gnats. She had no contact with animals where she worked. During a vacation in the country the last two weeks of July she had had no contact with animals and had not noticed insects' stings.

COMMENT

The principal clinical finding in seven patients with strongly positive serologic reactions for toxoplasmosis was generalized lymphadenopathy, which had not been noticed by patient. The enlarged, painless lymph nodes were firm and discrete and were found in the neck, groins, axillas, and in two cases in the suboccipital region and the hilus of the lungs as well. One patient complained of a pain in the left hypochrondrium, but there was no enlargement of the spleen.

In three patients, the adenitis was the sole finding and was only revealed on examination Of the other patients, one complained of marked lassitude with no obvious cause; the remaining three cases showed some elevation of temperature and nonspecific catarrhal symptoms. In one patient this was accompanied by infiltration of the right lung and persistent mucous diarrhea. It cannot be decided at present whether these more acute symptoms are manifestations of the disease itself or are due to a secondary infection. One patient had a positive antistreptolysin reaction and an elevated sedimentation rate, whereas in the others both the sedimentation rates and the total leukocyte counts were normal. Two patients showed eosinophilia and relative lymphocytosis, and in three patients the lymphocyte count was at the upper limit of normal. The lymphocytes were atypical, with an increased basophilia of the cytoplasm.

In considering the differential diagnosis, it is important that there was no exanthema and that the Wassermann and Paul-Bunnell reactions were negative. It is considered not improbable that in some diseases diagnosed clinically as infectious mononucleosis, in which the Paul-Bunnell reaction is found to be negative, tests would show a positive serologic reaction for toxoplasmosis.

Although in congenital toxoplasmosis lesions in the eyes and central nervous system dominate the clinical picture, no abnormality of these organs was found. The enlargement of the lymph nodes persisted for several

V 14
1951

months, and in three cases the convalescence was accompanied by pronounced tiredness. All patients, however, made a complete recovery.

Unexplained fever or marked lassitude in pregnancy would seem, therefore, to indicate a thorough search for enlargement of lymph nodes. It should be noted, however, that experience with natural and experimental toxoplasmic infections in animals shows that there is good reason to expect that the acquired disease may occur in more than one form and may not even become manifest clinically.

An attempt was made to demonstrate Toxoplasma in a lymph node removed at biopsy. Microscopic examination and animal inoculation gave negative results. Although positive findings by these methods are needed to make the final diagnosis, it is felt that the results of the serologic tests make the diagnosis probable. The titers found in these cases were of a level hitherto found only in confirmed congenital toxoplasmosis. Moreover, it was possible to demonstrate that the progression of the disease was accompanied by rising titers which fell during convalescence. The association of lymphadenopathy and positive serologic reaction in the same clinical picture seems justified by the fact that in the familial outbreaks the remaining members of the family with no lymph node enlargement showed negative serologic reactions.

The epidemiology of toxoplasmosis is not clear. Recently, with Christiansen,[5] I have shown that the protozoa isolated from wild hares dying from toxoplasmosis are serologically and in pathogenicity apparently identical with the human Toxoplasma strain R. H. In Copenhagen a surprisingly large number of dogs have been found to have positive serologic reactions.[4] Since the viscera of hares and the urine of experimentally infected dogs are found to contain Toxoplasma, the possibility of transmission from these sources should be taken into account. The natural route of infection is unknown, but the possibility of infection via the alimentary or upper respiratory tracts, as well as via the bites of blood-sucking insects, should be considered.

SUMMARY

Seven cases of enlargement of the lymph nodes with positive serologic reactions for toxoplasmosis are described. Six cases were in children and one in an adult. Five cases occurred in two familial outbreaks. No signs of involvement of the eyes or of the central nervous system were found, and all the patients recovered completely. Evidence for regarding these as cases of acquired toxoplasmosis and the epidemiology of toxoplasmosis are discussed.

Amager Boulevard 80.

5. Christiansen, M., and Siim, J. Chr.: Toxoplasmosis in Hares (Lepus Europaeus) in Denmark, read before the 5th International Congress for Microbiology, Rio de Janeiro, Brazil, August, 1950. Christiansen, M., and Siim, J. Chr.: Toxoplasmosis in Hares in Denmark: The Serological Identity of Human and Hare Strains of Toxoplasma, Lancet 1: 1201-1203, 1951.

147
51

SOME USEFUL NEUROLOGICAL TESTS

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The following simple clinical tests, easy to perform and to interpret, and requiring but little time, deserve wider use. For everyday neurological examination in the office, they have proved highly valuable. Single eponyms, frequently used in neurological textbooks often are not and cannot be historically correct. They are meaningless to the student and tax his memory without commensurate benefit. For this reason, no eponyms will designate any of these tests. They will be given physiological names.

LID VIBRATION TEST

Many years of experience have proved the following test to be the most dependable and sensitive for the detection of a facial palsy, central or peripheral. Here the palpable vibration of the orbicularis oculi on contraction is tested. The patient closes his eyes, and with his thumb the examiner lifts the upper lid against resistance. In a normal person the examiner feels the vibration of the upper lid which is rapidly successive, vigorous, and extensive. This is because every voluntary contraction of the muscle is practically a tetanus. In facial paralysis, both central and particularly peripheral, this palpable vibration is diminished; it is less vigorous, less frequent, and less extensive. This diminished palpable vibration of the upper lid presages an imminent facial paralysis long before other clinical signs become evident, and for years may remain the only residual after complete clinical recovery from facial palsy.

WINKING-JAW TEST

When this test is positive, the mandible moves to one side as the cornea on the other side is touched. This is a movement of the external pterygoid muscle, associated with a contraction of the orbicularis oculi muscle which is incident to the touching of the cornea. Using a glass applicator, the examiner touches one cornea with some force. A strong reflex closing of the patient's eye should be achieved. Simultaneously with the closure of the eye, the mandible moves quickly to the opposite side. The same movement may occur when the patient actively closes one eye briskly and forcefully. This associated movement of the mandible indicates a lesion of the corticotrigeminal pathways on the side of the touched cornea. It does not occur in the normal subject. The value of such a positive test lies in the fact that there is no, or no better, indication of a supranuclear lesion of the trigeminal nerve.

HEAD RETRACTION REFLEX

This is a reflex of the muscles which retract the head, i. e., which bend it backward. It is elicited as follows: The patient is made to relax, with his head bent slightly forward and the examiner taps the middle of the upper lip with the reflex hammer in such a way as to bring about

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a further flexion of the head, with further stretching of the retractors. If this reflex is positive, the patient responds to the hammer-blow by brisk, short retraction of his head. This occurs in bilateral lesions of the pyramidal tract above the cervical cord. It has been seen in diffuse brain lesions such as cerebral arteriosclerosis, hypertensive encephalopathy, cerebral syphilis, and in advanced cases of amyotrophic lateral sclerosis, lateral sclerosis, and dorsolateral sclerosis. In the normal subject, the reflex is negative; only slight oscillation of the head occurs, and there is no retraction.

HEAD BENDING TEST

The examiner bends the head of the sitting patient forcibly forward. Physiologically this means considerable elongation of the spinal cord, the meninges, and roots. This is the basis of the famous Brudzinski neck sign. If this elongation is carried out on the lower end of the cerebrospinal axis by raising the outstretched leg of the patient, it forms the physiological basis of the signs of Lasègue and of Kernig. In the normal subject the mobility of the spinal cord, meninges, and roots is such that the patient has no discomfort on head bending. If there is any affection of the meninges, or of the roots, on head bending the patient has pain or paresthesias exactly in the affected area. This is most dramatically seen in compression or stretching of a root by a tumor or intervertebral disc, but is seen also in diffuse affections of the roots, i. e., polyradiculoneuritis. Patients describe the sensation as "electric shock" or "tingling." This reaction of the patient constitutes a valuable diagnostic aid. In the so-called Guillain-Barré syndrome these painful sensations are mostly localized in the legs and in the heels, sometimes even in the fingers. In multiple sclerosis and dorsolateral sclerosis the sensations are felt in the upper back. In multiple sclerosis this may be one of the earlier signs. Even if the test is negative, i. e., when the patient does not complain when his head is passively bent, the sign has significant diagnostic value, since it means that the spinal meninges and roots are free, or at least not grossly encroached upon. The general usefulness of this simple test is incontestable.

ARM DEVIATION TEST

The patient, with arms outstretched horizontally before him, stands in front of the examiner. The examiner stretches out his arms and supports the fingertips of the patient with his own fingertips. The patient closes his eyes. The examiner removes his support allowing his arms to remain in the horizontal position. He ascertains whether one or both of the patient's arms deviate, and in which direction. He measures the degree of deviation from the position of his own arms.

In the normal subject the arm deviates not at all, or very slightly outward and upward. In pyramidal lesions the arm deviates downward. In cerebellar lesions the arm deviates strongly outward and upward. It may deviate outward and downward, but it is the deviation outward which must be regarded as typical. In extrapyramidal lesions (as in paralysis agitans, or Parkinson's disease) the arm deviates downward and inward. In parietal lobe lesions the arm deviates slightly downward while the fingers perform spontaneous, involuntary athetoid movements.

HEAD DROPPING TEST

This test is valuable for the diagnosis of early paralysis agitans. Rigidity, typical for this disease, usually starts in the muscles of the neck. The test serves to detect such rigidity, even of the slightest degree. The patient lies supine on a padded surface without a pillow. The examiner slips his left hand under the patient's head while it rests on the table. With his right hand, he lifts the patient's head suddenly, briskly, unexpectedly, and allows it to drop so that it falls back on his left palm.

In the normal subject when the patient is fully relaxed, the head drops heavily like dead weight. In paralysis agitans the head drops slowly, gently, hesitantly, due to the rigidity of the neck muscles. In far-advanced cases, when asked to lie supine on the table, the paralysis agitans patient keeps his head elevated so that his occiput never comes in contact with the surface, and this position is maintained indefinitely—"frozen head dropping test." The test is so sensitive that it can be said when the head dropping test is normal, paralysis agitans of any variety can be excluded.

SHOULDER SHAKING TEST

Extrapyramidal rigidity documents itself very early in the diminution of pendulousness of the arms in walking. When this diminution is unilateral it becomes a valuable sign of incipient paralysis agitans. This diminution is plainly seen when the patient walks, but can be demonstrated even with greater clarity by the following test. The examiner stands facing the patient and places his hands on the patient's shoulders. He shakes the shoulders in a brisk and alternating rotatory movement, to and fro, and with varying speed and force. This produces arm swinging the intensity of which can be controlled by the examiner. In paralysis agitans the muscle rigidity reduces the excursion of the swinging arm, either bilaterally or unilaterally. The difference between the two sides may be striking. Even if slight, the difference in the range of movement can, to some degree, be appraised quantitatively.

This test is valuable in another way. Not only extrapyramidal rigidity produces diminished pendulousness of an arm in walking, but a homolateral cerebellar affection may do the same. In this case, though there is no hypertonia as in extrapyramidal disease, but cerebellar hypotonia instead, still the affected arm swings less. The pathophysiology is not the same in the two conditions. Extrapyramidal affections diminish pendulousness through rigidity of the affected muscles. Cerebellar affections produce diminution of pendulousness through "decompensation of movement." Here the arm, though hypotonic, does not move synchronously with the contralateral leg in walking, due to cerebellar dyssynergia, i. e., the lack of synergic movements of different parts of the body. If a patient shows diminution of the pendulousness of one arm in walking, the question arises as to whether this is extrapyramidal or cerebellar in origin. The shoulder shaking test will decide the issue. If, on shoulder shaking, the affected arm moves less, the affection is extrapyramidal; if it moves more, cerebellar.

V 14
1951

PUSH TEST

The patient stands with his feet apart, bearing his weight evenly on both legs. The examiner, his hand on the patient's sternum, pushes him gently backward. The normal person, to prevent falling backward, innervates the dorsiflexors of his feet and toes and lifts the toes slightly from the floor, shifting his weight to his heels. Patients with paralysis agitans do not do this. The whole foot remains flat on the floor. This is particularly striking in unilateral paralysis agitans. When the patient is pushed backward, on the healthy side there is a normal visible contraction of the dorsiflexors of the toes and foot and slight lifting of the toes. The affected side remains static.

PENDULOUSNESS OF THE LEGS TEST

This simple and reliable test serves quickly to appraise the muscle tonus of the lower extremities. The patient sits on the examining table, his legs hanging freely over the edge. He is made to relax. The examiner lifts the patient's legs and allows them to drop, observing the length of time and the manner in which they swing. This test gives valuable information in diseases of the pyramidal, cerebellar, and peripheral nervous systems. But the test is most helpful in the diagnosis of extrapyramidal rigidity, as in paralysis agitans. This rigidity very markedly shortens the swinging time. In unilateral paralysis agitans the difference in the swinging time between the affected and the healthy side is obvious.

ASSOCIATED MOVEMENTS TEST

A pyramidal lesion is characterized by the tendency of the patient to perform mass movements instead of single, fine movements. Such a test is valuable for differential diagnosis between spastic and flaccid paralysis of the extremities. Two examples may be cited. In spastic paralysis of the dorsiflexors of the hand and fingers, the patient is unable to dorsiflex his wrist on command. But when he is asked to grasp an object with his affected hand, he simultaneously dorsiflexes his wrist in the form of an associated movement. In peripheral paralysis of these muscles, as in paralysis of the radial nerve, the patient does not perform this dorsiflexion of his wrist in grasping. On the contrary, in squeezing the object with his fingers, he volarflexes his hand still more. In spastic paralysis of the dorsiflexors of the foot, the patient, unable to dorsiflex his foot on command, performs this very movement automatically when the flexor withdrawal reflex (homolateral mass flexion reflex) is elicited, i. e., when his toes are forcibly flexed plantarward. In peripheral palsy of the dorsiflexors of the foot, this passive flexion of the toes has no effect on the dorsiflexors of the foot.

ASSOCIATED MOVEMENT OF THUMB

The basis of this sign is the general tendency of a patient with a pyramidal lesion to perform mass movements instead of single, fine movements. With his left hand, the examiner tightly grasps the patient's wrist on the affected side. With his other hand the examiner hooks his four fingers into the four bent fingers of the patient. The patient is asked to bend his four fingers further against those of the examiner, and to exert all his strength in a pulling motion. If there is the slightest spastic paralysis of the hand, the patient's thumb is adducted, flexed, and is moved in toward his palm. This is a very early pyramidal sign. In the normal subject, the thumb remains immobile, or its end phalanx bends slightly. It is particularly the marked difference in the behavior of the thumb on the two sides that renders this test valuable.

DISSOCIATION BETWEEN ABDOMINAL SKIN AND ABDOMINAL MUSCLE REFLEXES

Every neurological textbook speaks of "abdominal reflexes." These reflexes are so important and diagnostically popular that the term "abdominal" is often used alone when referring to the reflexes. However, the term "abdominal reflexes" is incorrect and misleading. A strict distinction must be made between the abdominal skin and the abdominal muscle reflexes. The first is a superficial, a "skin" reflex. Without being touched, the muscle contracts on stimulation of the skin. The second is a deep or muscle stretch reflex. Here the muscle contracts when stretched. The abdominal muscles have both types of reflex, and these types must be strictly differentiated. It is highly confusing to use the term "abdominal reflexes" and by it to designate only the superficial (skin) reflexes. In a pyramidal lesion, for instance, the behavior of each type of reflex is quite different: If the lesion is bilateral and affects the pyramidal tracts above the sixth thoracic segments, we have dissociation of abdominal skin and abdominal muscle reflexes—the abdominal skin reflexes are lost, and the abdominal muscle reflexes exaggerated. There is no more reliable sign of a bilateral pyramidal lesion above the sixth thoracic segment than this dissociation. It is even superior to the Babinski reflex.

MEDIAN NERVE TEST

To determine a defect in the function of the median nerve, we usually examine for the opposition of the thumb. However, it is better to examine for the abduction of the thumb which is a pure median function, and is more easily appraised quantitatively. With the patient's fingers extended, palmar surfaces facing each other, the finger tips make contact so as to form a sort of steep roof. The thumbs are then abducted, their inner surfaces kept at right angles to the palms, their tips kept in apposition. A triangle is formed, with the thumbs as the base, and the index fingers as the sides. In a median palsy the thumb on the affected side cannot be abducted as far downward as the one on the normal side. The base of the triangle, therefore, is broken, the thumb on the affected side being higher than that on the normal. The more severe the median nerve palsy, the higher the tip of the affected thumb stops above that of the healthy thumb. As recovery proceeds, the patient is able to abduct the affected thumb more and more, until its tip approximates that of the normal thumb. This is not only a quantitative, but a qualitative test as well.

TENDON PALPATION TEST

A tendon is palpated with the thumb to estimate its resistance to pressure. In affections of the cerebellum and peripheral nervous system the tendon is soft and offers less resistance; it is more easily compressed than in the normal subject. This is particularly true of the Achilles tendon. The patient stands on the examining table with his back to the examiner. Care should be taken that his

weight is distributed evenly on both feet. The examiner grasps the patient's ankles, his thumb touching the Achilles tendon. The tendon is compressed on both sides simultaneously, and the resistance judged. In sciatic neuritis of any origin the Achilles tendon is softer and offers less resistance than the normal tendon. In the manifold affections of the sciatic nerve or its roots, for instance in the presence of a protruded intervertebral disk or in infectious sciatic neuritis, the softness of the Achilles tendon is striking. The softness of this tendon may be of decisive importance for differential diagnosis between a neurogenic and a non-neurogenic affection.

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BRACHIAL PLEXUS BLOCK ANESTHESIA IN CHILDREN

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Since 1897 there have been many works published on anesthesia of the upper extremity by injection of the brachial plexus. The general consensus is in accord with Labat's observation that "the brachial plexus block is the method of choice for all major operations on the upper extremity." [1] However, the commendation accorded this method of anesthesia has not elevated it to the position that it merits in the armamentarium of the pediatric anesthesiologist. The literature has commonly indicated that children are poor subjects for local anesthesia because of the difficulty in obtaining their cooperation and because they may sustain serious psychic trauma during the procedure.[2] That this is not a universal attitude is manifested by a number of articles which suggest that children are suitable subjects for brachial plexus block.[3]

The following is a report of the program pursued in the management of 151 brachial plexus block anesthesias performed on 150 children.

SPECIAL CONSIDERATIONS

The actual block of the brachial plexus in a child is but a small part of this procedure. Attention to the several psychological, pharmacologic, and anatomic considerations involved are most important to the success of the method. The salient features of these considerations will be discussed.

Every child requiring surgery because of illness or accident suffers not only from physical trauma attendant upon the injury or disease, but also from the severe psychic trauma related to hospitalization and its associated awesome sights, sounds, and smells, dislocation from the family, and disruption of the familar daily routine. Such a child is disturbed by fears, anxieties, and apprehensions. Some children contain their natural fears admirably and may reveal nothing more than a slight elevation of the pulse rate. The majority, however, are too young to exert such praiseworthy emotional control, and exhibit evidence of the stress they suffer, some by an inordinate amount of vigilance and curiosity, many by crying continuously for a parent, a number by whimpering at every approach, and a few by complete negativism. To expect cooperation and rational behavior from children as a requisite to a successful brachial block is a mistake. Many children can cooperate fully; a number of children in this series required no more than a simple explanation of the proposed procedure after which the block was accomplished without opposition. Nevertheless, it is prudent to assume at the outset that every child is going to object actively to all advances, and one must be prepared to manipulate circumstances as the indications arise.

Another important consideration is the selection of the premedication: choice of drugs, dosage, and the route of administration. The aim is quickly but safely to provide a short period of hypnosis and amnesia, without notable respiratory depression. Attainment of this goal 100% of the time is not easily achieved; frequently it is accomplished; more often it is closely approximated with very satisfactory results. In this study morphine, meperidine (demerol®), atropine, scopolamine, and pentobarbital (nembutal®) sodium were administered in several combinations intravenously, intramuscularly, and subcutaneously; thiopental (pentothal®) sodium and pentobarbital sodium were given by rectal instillation. In this series experience with any one drug or combination of drugs has not been extensive enough to justify any positive conclusions or recommendations for a standard routine. However, some general conclusions have been drawn which may be helpful.

Though a child appears to be free of fear and apprehension it is wise to administer a barbiturate, such as pentobarbital sodium, for the specific protective property of the barbiturates against procaine hydrochloride (novocain®) reactions. Furthermore, the apparent stoicism of the child is usually the product of a strenuous voluntary effort, and the psychic sedation provided will

The pentobarbital sodium used in the cases reported in this paper was supplied by the Abbott Laboratories, North Chicago, Ill.

1. Labat, G.: Regional Anesthesia: Its Technic and Clinical Application, Philadelphia, W. B. Saunders Company, 1922, p. 199.

2. (*a*) Adriani, J.: Techniques and Procedures of Anesthesia, Springfield, Ill., Charles C Thomas, Publisher, 1947, p. 293. (*b*) Dogliotti, A. M.: Anesthesia: Narcosis, Local, Regional, Spinal, Chicago, S. B. Debour, Publishers, 1939, p. 297. (*c*) Hewer, C. L.: Recent Advances in Anaesthesia and Analgesia (Including Oxygen Therapy), ed. 6, Philadelphia, The Blakiston Company, 1948, p. 188. (*d*) Karp, M., and Teuscher, G. W.: General Anesthesia in the Difficult Pedodontic Patient, J. Pediat. **30**: 317-323 (March) 1947. (*e*) Botsford, M. E.: Anesthesia in Infant Surgery, Anesth. & Analg. **14**: 286-288 (Nov.-Dec.) 1937.

3. (*a*) Farr, R. E.: Local Anesthesia in Infancy and Childhood, Arch. Pediat. **37**: 381, 1920. (*b*) Pitkin, G. P.: Conduction Anesthesia: Clinical Studies of George P. Pitkin, edited by J. L. Southworth and R. A. Hingson, Philadelphia, J. B. Lippincott Company, 1946, p. 387. (*c*) dePablo, J. S., and Diez-Mallo, J.: Experience with 3000 Cases of Brachial Plexus Block: Its Dangers; Report of a Fatal Case, Ann. Surg. **128**: 956-964 (Nov.) 1948. (*d*) Accardo, N. J., and Adriani, J.: Brachial Plexus Block: A Simplified Technic Using the Axillary Route, South. M. J. **42**: 920-923 (Oct.) 1949. (*e*) Macintosh, R. R., and Mushin, W. W.: Local Anaesthesia: Brachial Plexus, Oxford, England, Basil Blackwell & Mott, Ltd., 1945, p. 1-55. (*f*) Lundy, J. S.; Tuohy, E. B.; Adams, R. C., and Mousel, C. H.: Clinical Use of Local and Intravenous Anesthetic Agents: General Anesthesia from Standpoint of Hepatic Function, Proc. Staff Meet., Mayo Clin. **16**: 78 (Jan. 29) 1941.

V 14
1951

ease the inner tension appreciably.[4] When pentobarbital sodium is administered alone for mild sedation the dose should not be large enough to produce sleep, for then there is a possibility that the patient may become uncontrollably restless.

TABLE 1.—*Dosage of Premedicating Drugs, Mg.*

Age	Morphine Hydrochloride	Atropine Sulfate	Scopolamine Hydrobromide	Meperidine Hydrochloride	Pentobarbital Calcium
1-2	1.0	0.10	....	15	15
2-3	1.2	0.12	....	20	20
3-4	1.6	0.12	....	25	25
4-5	2.0	0.16	....	30	30
5-6	2.0	0.16	0.12	35	35
6-7	3.0	0.20	0.16	40	40
7-8	3.0	0.20	0.20	50	50
8-9	4.0	0.32	0.20	50	50
9-10	4.0	0.32	0.32	50	60
10-11	5.0	0.42	0.32	50	60
11-12	6.0	0.42	0.42	50	60

Scopolamine is probably best not used on children under five because it tends to produce delirium and mania during the recovery period, a result which can be most difficult for the nurses and alarming to the parents.[5]

Rectal thiopental produces a quiet sleep during which a brachial plexus may be readily blocked; however, this sleep will last only 30 min. to one hour, and with emergence the child may become unmanageable. When rectal thiopental is used for premedication additional medication should be available for administration at the first sign that the child is awakening.

The combination of morphine, atropine, and pentobarbital sodium or that of meperidine and pentobarbital sodium administered intravenously enables one to attain the ideal in premedication of children for brachial plexus anesthesia. Meperidine and a 5% solution of pentobarbital sodium form a precipitate if mixed in the same syringe but can be injected through one venipuncture from two syringes by completion of the injection of one drug, disconnection of the syringe from the needle, and attachment of the second syringe, with care not to displace the needle from the vein. Any overt opposition to the procedure on the part of the child is likely to be met at the time of the venipuncture; finesse in its performance and the use of sharp needles of finest gage will minimize the patient's objections.

Below is the dosage of the drugs (Table 1) that have proved useful in this study. The figures represent maximum single doses given, except in several instances in which the children were unusually high strung. Factors which influence the selection and the dosage of drugs are the age of the child, the size, general condition, and severity of trauma, and the degree of nervous irritability. It is advisable to err on the side of insufficient medication initially, for such errors are easily corrected with additional doses, whereas overenthusiastic use of these potent drugs may expose the child to unnecessary danger of central nervous system depression.

The anatomy of the brachial plexus is another matter for consideration. Because the brachial plexus block in the child is an anatomic procedure, a clear understanding of the relationships of the several structures involved is necessary to the attainment of a reliable proficiency in the performance of the block. The many good texts available and the laboratory dissection of the plexus are interesting aids to this understanding.

In the technic employed in this study the fact that it is possible to palpate the first rib below the supraclavicular fossa of a child so that it can be distinguished with certainty from all other structures was utilized to the utmost advantage in almost every case. This palpation is possible even though the child has a chubby layer of adipose tissue; the tissues of children are usually thin in this region and offer little resistance to deep palpation. A second helpful indication is the pulsation of the subclavian artery. Facility in locating these two guides is attained after some experience; the process of anesthetizing the brachial plexus in a child then becomes easier than in an adult.

ANESTHETIC SOLUTION

The anesthetic solution used in this series was prepared as follows: to 42.5 cc. of sterile saline solution was added one 5-cc. ampoule of 20% procaine hydrochloride solution (1.0 gm.), one 2-cc. ampoule of 1% tetracaine (pontocaine®) hydrochloride solution (20 mg.), and 0.5 cc. of 1:1,000 epinephrine (adrenalin®) hydrochloride solution. The resulting solution then consisted of 50 cc. of 2% procaine hydrochloride and 0.04% tetracaine with 1:100,000 epinephrine.

The total amount of solution injected varied with the age and size of the subject, and is given in Table 2.

TECHNIC

A short observation period during which one endeavors to appraise the child, and to develop a friendly relationship is the first step in a brachial plexus anesthesia. The assistance of a nurse to do some mothering is of inestimable value at this time. Surgical equipment, particularly hypodermic needles, are fear-inspiring implements, and are best kept out of sight until time for their use. It is during this period that the premedication is selected and administered.

One hundred and twenty-four blocks were performed by the supraclavicular route, essentially after the method described by Kulenkampff.[6] The remaining 27 blocks

TABLE 2.—*Total Anesthetic Solution*

Age of Patient, Year	Amount of Solution
1-3	7-12 cc.
4-6	10-15 cc.
7-9	15-20 cc.
10-12	15-25 cc.

were induced by a modification of the axillary approach described by Accardo and Adriani.[3d] The popular supraclavicular method is discussed here; the subaxillary modification of the Accardo and Adriani axillary technic will be described in a future paper.

In performing the supraclavicular block the head is maintained in the midline and turned about 45 degrees to the opposite side. The shoulder of the side to be blocked should be depressed caudally as much as pos-

4. (*a*) Lundy, Tuohy, Adams and Mousel.[2f] (*b*) Migliarese, J. F.: Bauer, E. C., and Randall, L. O.: Prevention of Procaine Convulsions by Presidon and Sodium Pentobarbital, Proc. Soc. Exper. Biol. & Med. **73**: 53-55 (Jan.) 1950.

5. Waters, R. M.: Pain Relief for Children, Am. J. Surg. **39**: 470-475 (Feb.) 1938.

6. Kulenkampff, D.: Die Anästhesierung des Plexus brachialis, Deutsche med. Wchnschr. **38**: 1878-1880, 1912.

sible while the arm is held closely to the side of the patient. The skin is prepared surgically and draped. A skin wheal is raised about ½ in. (1.27 cm.) above the midpoint of the clavicle and the subcutaneous tissue is infiltrated with a few minims of anesthetic solution. With a palpating finger just medial to the skin wheal the first rib is encountered close to the subclavian artery. In most instances the artery will be palpable; when it is not, the most anterior portion of the rib will be the only deep bony guide. A 1½ in. (3.8 cm.) 23-gage needle is inserted through the skin wheal and advanced slightly medially, downward, and forward to impinge upon the first rib close to the subclavian artery. The use of a 23-gage needle lessens the possibility of a hematoma developing if a vessel is entered; it also decreases the likelihood of a pneumothorax if the cupola of the lung should be penetrated because the first rib had been missed. The depth that the needle must be inserted will vary from ½ to 1¼ in. (1.27 to 3.2 cm.), depending on the structure of the neck. The needle is held in such a way as to prevent further movement, and a 10-cc. Luer-Lok control syringe with anesthetic solution is attached. Firm aspiration is advisable at this time, and once or twice more during the subsequent injection, in order to be certain that an intravascular injection is not about to take place. The injection is started, and as it proceeds the needle is slowly withdrawn; when the needle has been pulled back two-thirds of the distance from the skin to the first rib, the injection is stopped. The needle is withdrawn until its point is just under the skin, and then once again advanced to the first rib about ⅓ in. (0.9 cm.) posterior to the previous point of contact; the injection and withdrawal maneuver is repeated with precautionary aspirations. For the third and last time the foregoing procedure is carried out about ⅓ in. (0.9 cm.) farther back on the first rib.

The anatomic approach detailed above is more reliable in children than attempts to elicit paresthesias, which may be preferable for adults.

Injection of the anesthetic solution is made at a rate of 1 cc. every two seconds, a third of the total amount being injected at each site; slight swelling ordinarily is palpable at the area of injection, and this is massaged with the finger tips until it disappears.

Anesthesia progresses very rapidly. Muscular weakness and loss of skin sensation are evident in from two to 15 min. A surgical scrub may begin at this time. After 15 min. the intended procedure may begin.

MATERIAL

The youngest of this group of 150 children was 15 mo. old and the oldest was 12 yr. old. The average age of the group was six years and seven months. The lesions for which brachial plexus block anesthesia was administered included multiple lacerations of the hand, fingers, wrist, and forearm, with and without associated cut tendons; traumatic amputation of fingers; compound and simple, single and multiple fractures of the radius, ulna, and humerus; and dislocations with and without fracture of the elbow. All of these children except three had acute traumatic conditions; those three had chronic lesions requiring surgical treatment. One child had a supracondylar fracture of the right humerus partially reduced in the outpatient department and two days later received another brachial block for further manipulation of the fracture while remaining in the ward so that disturbance of the traction apparatus could be avoided.

RESULTS

In 125 patients the results were very good. The preliminary attainment of rapport was most satisfactory in these children; premedication induced a state of drowsy unconcern or light sleep during which the brachial block was accomplished with facility and the operative procedure progressed without the slightest evidence of discomfort from the patient. In 24 cases in which the child was asleep for the block and surgery, the question arose as to whether the brachial plexus block was the anesthesia or whether the premedication had been heavy enough to provide general anesthesia. In each of these cases the child was stimulated upon the opposite extremity by mild pinching, pressure on a finger nail, or pricking with a needle; in every instance there was notable response to this stimulation which provided undeniable proof that the brachial plexus block was the anesthesia.

In 12 patients the results were good. In these children the brachial plexus anesthesia was as good as in the first group, but the preliminary interview and premedication were not completely satisfactory, with the result that each of these children actively objected to the procedure by crying or whimpering and attempting to move away during the initial stage. However, once that was accomplished the block was easily completed. After the onset of anesthesia, and during operation, there was complete cooperation from the patient.

In six patients the results were fair. Here, as in the preceding groups, the anesthesia from the brachial plexus block was complete when judged by the absence of response to painful stimuli. However, each of these children treated for fracture of both bones of the forearm complained of discomfort from manipulation of the fractures, which he described as pressure. In each case muscular relaxation seemed adequate and reduction of the fractures was accomplished. These six children were very apprehensive and fearful before being premedicated, but after the operation each confessed that the discomfort had been less than he feared it would be.

In the remaining eight patients brachial plexus block anesthesia failed. One was a 4-yr.-old girl who had sustained extensive lacerations on the palm of her left hand. Brachial plexus block was easily performed but provided insufficient anesthesia in the portion of her hand supplied by the ulnar nerve. Supplementation with local infiltration permitted satisfactory completion of débridement and repair of the lacerations. Seven other children with hand and finger injuries became so uncontrollably restless and fussy after an uneventful application of the brachial plexus block that it was impossible to attempt surgery or to determine positively the efficiency of the block. All seven evidenced unmistakable impairment of motor power in the blocked extremity which would certainly indicate some sensory anesthesia. Three children were given supplementary nitrous-oxide oxygen. Four were given additional medication that procured a deep sleep during which painful stimuli applied to the opposite extremity elicited only feeble reactions. However, respira-

V 14
1951

tions remained adequate for good oxygenation with supplemental oxygen supplied by a catheter inserted into an oropharyngeal airway, and the surgical procedure went forward without further delay. Both children made uneventful recoveries.

The shortest anesthesia obtained was about 50 min. and the longest noted by personal observation was three hours and 45 min. The average duration was approximately two and one-half hours. In one case the operative procedure required five hours; the brachial plexus block began to wear off at two and one-half hours after the start of the surgery; the block was reenforced with a 10 cc. injection of anesthetic solution and remained completely effective until after the operation was terminated. In all other cases a single block outlasted the necessary surgical procedure.

COMPLICATIONS

Because many of this group were treated as outpatients and a number were discharged a day or two after admission, it has been impossible for the clinician administering the anesthetic to these children to make all the necessary postoperative observations. However, the cooperation of the surgical and nursing staffs has been invaluable in this regard. A compilation of all reports and observations from all sources indicated that complications have been notably few and insignificant.

Reported complications of brachial plexus block include hematoma, pneumothorax, toxic reactions from the anesthetic solution, temporary paralysis of the diaphragm, temporary hoarseness, mediastinal emphysema, permanent neural damage, death from intravascular injection, and unexplained death.[7]

Reactions from the anesthetic solution, hematoma and pneumothorax are the most common of the important complications and may be reduced by the precautions of giving a preoperative barbiturate, using fine-gage needles, and attending carefully to the details of performing the block.

Complications encountered in this study consisted of four small hematomas which were asymptomatic and subsided rapidly; there were three instances of Horner's syndrome which subsided with the anesthesia; in one child a rectal temperature of 102 F. developed, accompanied with a four-hour period of hyperpnea postoperatively. This was thought to be due to some atelectasis from respiratory depression resulting from overzealous premedication; recovery was uneventful; a chest x-ray next day was normal.

An increase in heart rate was observed in each case; this occurred irrespective of the inclusion of atropine or scopolamine in the premedication and was attributed to the epinephrine content of the anesthetic solution.

COMMENT

The brachial plexus block is a very satisfactory anesthesia for surgery of the upper extremity in children. It provides excellent relaxation and complete freedom from pain. At the same time it makes it possible to avoid the use of general anesthesia in circumstances in which general anesthesia is least desirable; e. g., in the outpatient department, after ingestion of food, in the presence of respiratory disease, when traumatic shock is present, and for long operations.[8]

It has been pointed out that blocking the brachial plexus has a beneficial effect on traumatic shock associated with severe injuries to the upper extremity; also, the sympathetic nerve block occurring concomitantly with the sensory and motor anesthesia may have a beneficial effect on the circulation of the damaged member.[8n]

The reader may have gained the impression that the preliminary management and the technic of procuring anesthesia by brachial plexus block is too time-consuming to be practical. Were this true it would constitute a valid objection to the method. However, from the moment the anesthesiologist meets the patient until he instructs the surgeon to proceed no more than 40 min., on the average, need be consumed. This is possibly a few minutes longer than it takes to prepare a child and to administer a general anesthetic to a depth commensurate with the proposed surgery.

SUMMARY

A series of brachial plexus block anesthesias in children between the ages of 15 mo. and 12 yr. is reported.

The importance of preoperative management is emphasized.

Experiences with the use of sedating drugs is evaluated.

A technic of brachial plexus block in children is presented.

The results have been very good in this group and the complications have been negligible.

114 Longwood Ave.

7. (*a*) De Pablo and Diez-Mallo.[5c] (*b*) Accardo and Adriani.[5d] (*c*) Macintosh and Mushin.[5e] (*d*) Shaw, W. M.: Paralysis of the Phrenic Nerve During Brachial Plexus Anesthesia, Anesthesiology **10**: 627-628 (Sept.) 1949. (*e*) Thurlow, J. F.: Brachial Plexus Anesthesia, Am. J. Surg. **77**: 338-343 (March) 1949. (*f*) Dimond, E. G.; Root, B., and Delp, M. H.: Brachial Plexus Anesthesia, Bull. U. S. Army M. Dept. **7**: 718-721 (Aug.) 1947.

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Medical Information in Lay Press.—We of the pharmaceutic industry are fully as unhappy as are most practicing physicians at premature announcements in unwarrantedly over-enthusiastic terms in the public press of so-called "wonder drugs." A free press is one of our precious institutions, and perhaps one of the prices to be paid therefor is the risk of such reports. Unfortunately, too frequently, medical information is interpreted by writers whose backgrounds in medicine are limited, understandably; limitations of space and of time often operate to their disadvantage in preparing material for publication; but it would seem that oversimplification and nonqualification might be minimized, and that enthusiasm might be temperate and controlled so that the lay reader might get a more accurate, less distorted picture. Health education activities, even to include dissemination of public health and medical information, are worthwhile: an informed public is a sound objective; and everyone is interested in his own personal health problems and desires information related thereto. But it is not sound to attempt to inform a public inadequately prepared therefor, with advanced medical information. "If 'a little knowledge is a dangerous thing' . . . a little less is a little more" is undoubtedly true; but insofar as medicine is concerned, a little more discretion in presentation of information through the daily press and through monthly and weekly periodicals . . . would do much toward creating less unhappiness and less dissatisfaction among larger numbers of lay and professional segments of our population.—J. P. Gray, M.D., Present Status of Antibiotics and The Future in This Field, *Rhode Island Medical Journal*, September, 1951.

CLINICAL NOTES

VITAMIN K_1 EMULSIONS IN BISHYDROXYCOUMARIN EMERGENCIES

RESULTS OF INTRAVENOUS ADMINISTRATION

Theodore B. Van Itallie, M.D., Robert P. Geyer, Ph.D., and Fredrick J. Stare, M.D., Boston

Recently an editorial in THE JOURNAL called attention to the dangers of anticoagulant therapy.[1] Although use of protamine sulfate intravenously has minimized the danger of hemorrhage due to heparinization, there exists no comparable rapid treatment for the hypocoagulable state induced by bishydroxycoumarin (dicumarol®). Accordingly, the severe hemorrhages which have complicated anticoagulant therapy have occurred principally in patients receiving bishydroxycoumarin.

Various forms of vitamin K have been used to reverse bishydroxycoumarin-induced hypoprothrombinemia. The relative ineffectiveness of most of these preparations is indicated by the fact that responses to them (in terms of prothrombin time or per cent of normal activity) are usually reported at 24-hour intervals.

It is acknowledged that it is not necessarily desirable to reverse completely the excessively prolonged prothrombin times which may inadvertently follow use of bishydroxycoumarin. Yet when such hypocoagulability is associated with hemorrhage, there can be no question about the necessity for rapidly reversing the prothrombin time. Moreover, a number of situations can arise which demand a rapid termination of the bishydroxycoumarin effect. One such situation is the appearance of an acute surgical problem in a patient who has been receiving the drug.

The use of a potent, rapidly acting vitamin K preparation for the treatment of bishydroxycoumarin-induced hypoprothrombinemia in the dog has been reported.[2] This preparation is a 5% emulsion of vitamin K_1 for intravenous administration prepared in this laboratory as described previously.[2] In dogs, experimentally produced bishydroxycoumarin hypoprothrombinemia was completely reversed in less than three hours, with marked improvement noted in 30 to 60 minutes, by means of the vitamin K_1 emulsion. Use of the preparation in the treatment of bishydroxycoumarin-induced hypoprothrombinemia in man was followed by considerable improvement in prothrombin activity within 60 to 120 minutes, with a continuing but more gradual return toward normal values thereafter.[3]

The following case reports, including one control case in which a commonly used water-soluble vitamin K preparation was employed, are presented as examples of the value of intravenously administered emulsions of vitamin K_1 in the management of emergencies associated with the use of bishydroxycoumarin.

REPORT OF CASES

CASE 1.—A 73-year-old Negro physician was receiving bishydroxycoumarin for a myocardial infarction. In addition to a long history of coronary insufficiency, he was known to have had a resection of an adenocarcinoma of the sigmoid with an end-to-end anastomosis six years previously. On the fifth hospital day he began to complain of generalized abdominal tenderness and colicky pain most marked in the left midabdominal region. This was followed by intermittent vomiting. A surgical consultant made a diagnosis of partial intestinal obstruction. The patient's prothrombin activity at the time was 12%. In anticipation of the possible need for emergency surgery, the consultant urged that an attempt be made to raise the prothrombin to a safer level as quickly as possible. Accordingly, the patient was given 650 mg. of emulsified vitamin K_1 (10 mg. per kilogram of body weight) intravenously. One hour after administration of the drug, the prothrombin activity was 30%, a far safer level for surgery.

CASE 2.—A 30-year-old white man [4] with thrombophlebitis of the right leg was receiving bishydroxycoumarin. Toward the end of his hospital stay there arose an urgent personal matter necessitating his presence at home as soon as possible. At that time his prothrombin activity was 24%. He was given 950 mg. of emulsified vitamin K_1 intravenously. Two hours later his prothrombin activity was 42%; four hours later it was 54%; seven hours later it was 65%. He was allowed to go home the same day. Forty-eight hours later, when he returned for a follow-up prothrombin determination, his prothrombin activity was found to be 90%.

In contrast to the preceding two cases is the following one, which is representative of a bishydroxycoumarin emergency treated with a commonly used water-soluble vitamin K preparation.

CASE 3.—A 62-year-old woman was under treatment with bishydroxycoumarin following a coronary occlusion. On the 35th hospital day a medium-sized cyst was removed from her right breast. After the procedure there was a great deal of hemorrhagic oozing from the operative wound. It was then discovered that by an oversight she had been receiving bishydroxycoumarin for the preceding four days. Her prothrombin activity proved to be 12%. Seventy-five milligrams of a water-soluble vitamin K preparation was administered intravenously every two hours for the following eight hours. The next morning the prothrombin activity was 18%, and a day later it was 24%. The oozing was finally controlled by pressure dressings, and it stopped spontaneously after 24 hours.

SUMMARY

An emulsion of vitamin K_1 suitable for intravenous administration is found to be extremely effective in bringing about a prompt decrease in the hypocoagulability induced by bishydroxycoumarin. Its use in two representative bishydroxycoumarin emergencies is described, and results are compared with those in a third case, in which a commonly available water-soluble vitamin K preparation was used.

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Vitamin K_1 was supplied by Merck & Company, Inc., Rahway, N. J.

From the Department of Nutrition, Harvard School of Public Health, and the Medical Clinics, Peter Bent Brigham Hospital.

These studies were supported in part by funds from the Nutrition Foundation, Inc., New York; The Upjohn Company, Kalamazoo, Mich., and the National Cancer Institute of the National Institutes of Health, United States Public Health Service, Bethesda, Md.

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ACNEFORM ERUPTION PRODUCED BY USE OF TETRAETHYLTHIURAMDISULFIDE

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Since it was discovered in 1948 that tetraethylthiuramdisulfide (antabuse®) sensitizes the organism to alcohol,[1] it has come to be used rather extensively in the treatment of alcoholism. During the clinical investigation of tetraethylthiuramdisulfide, the number of cases in which it has been used exceeds 5,000.[2] The explanation for the discomforting symptoms produced after ingestion of alcohol in a person who is taking tetraethylthiuramdisulfide appears to lie in the fact that the blood acetaldehyde level is increased in such persons.[3]

In the published literature two references have been found pertaining to skin eruptions during tetraethylthiuramdisulfide therapy. Gelbman and Epstein,[4] reporting on the treatment of 55 cases, commented that among this series skin rash developed in 3 cases. In each case the rash was easily eliminated by routine antihistaminic therapy—50 mg. of tripelennamine (pyribenzamine®) hydrochloride three times a day—for three or four days without discontinuing the use of tetraethylthiuramdisulfide. Lewis and Bremers [5] reported a patient in whom a fixed drug eruption developed whenever he took alcohol while being treated with tetraethylthiuramdisulfide. It was their opinion that the eruption was elicited by a product of the combination of the two drugs.

This report deals with a patient in whom an acneform eruption repeatedly developed coincident with the ingestion of tetraethylthiuramdisulfide. I feel reasonably certain that the patient did not take any alcohol at any time while taking tetraethylthiuramdisulfide. She was very fearful of the violent symptoms produced by ingestion of alcohol when tetraethylthiuramdisulfide was being taken. Once she had taken a teaspoonful of spirit of ammonia for "nervousness" while taking tetraethylthiuramdisulfide and had experienced such a severe reaction that she had been afraid she might die. Insofar as I can determine, a significant skin reaction to tetraethylthiuramdisulfide alone has not previously been observed. In a personal communication Dr. Richard C. Proctor,[6] who has had a fairly extensive experience with the drug, stated that to his knowledge an acneform eruption produced by use of tetraethylthiuramdisulfide has not previously been noted.

REPORT OF A CASE

A white woman, 41, was first seen on Dec. 30, 1950, with a moderately severe cystic acneform eruption of the face, anterior chest, and back. The face was quite dry, and there were practically no milia or comedones. There was no seborrhea of the scalp. She stated that the eruption had been present for about four months and that she had not experienced acne during adolescence.

The patient was questioned carefully about the use of laxatives, headache remedies, sedatives, and so forth to no avail. It was learned that iodized table salt was used in her home. Large doses of vitamin A were prescribed, and she was given a resorcinol mono-acetate-precipitated sulfur skin-colored cream with a water-washable base. She was told to use plain table salt.

Eight days later the patient telephoned and inquired whether or not the tetraethylthiuramdisulfide which she had been taking might have caused the eruption. When surprise was expressed at this revelation, she stated that she had not thought of it as a "drug" and had forgotten to mention it at the time when she had been questioned about "drugs." She stated that the medication had been prescribed to her by Dr. Richard C. Proctor about four months previously and that the eruption appeared shortly thereafter.

It was learned that on the day following her initial examination on Dec. 30, 1950, she had gone out of town and had neglected to take her tetraethylthiuramdisulfide with her. She stated that within two days after discontinuing use of the drug the eruption had almost completely disappeared.

On Jan. 8, 1951, use of tetraethylthiuramdisulfide was resumed with the usual dosage of 1 gm. daily along with 25 mg. of chlorprophenpyridamine (chlortrimeton®) maleate after meals and at bed time. The acneform eruption recurred within three days and within a week was as bad as ever. After two weeks use of both tetraethylthiuramdisulfide and chlorprophenpyridamine were discontinued, and the eruption cleared up within three or four days.

On Feb. 1, 1951, the patient resumed the use of tetraethylthiuramdisulfide along with 50 mg. of tripelennamine hydrochloride twice daily. The eruption recurred almost immediately but was not as severe as previously. On Feb. 7 the complete blood count findings were not remarkable, and at that time the use of tripelennamine was discontinued; however, the patient continued taking tetraethylthiuramdisulfide. Within a couple of days the acneform eruption was definitely more prominent. On Feb. 13 the patient resumed the use of tripelennamine in the previously mentioned dosage along with the use of tetraethylthiuramdisulfide. The large cystic lesions were gone within three days, but small acneform lesions continued to develop. After 10 days use of both tetraethylthiuramdisulfide and tripelennamine was again discontinued, and four days later no active lesions were discernible.

At the present time the patient is not inclined to resume the use of tetraethylthiuramdisulfide because she feels that she can get along without it, and she does not "cherish the thought of a bumpy face." Perhaps she may be persuaded to resume taking it later, and I hope to have the opportunity of making further observations on the effects of the various antihistamine drugs on this eruption.

COMMENT AND SUMMARY

A case is described in which there developed repeatedly a cystic acneform eruption of the face, anterior chest, and back, coincident with the ingestion of tetraethylthiuramdisulfide (antabuse®). I feel reasonably certain that the patient took no alcohol at any time while taking the drug and that the eruption was in no way related to any product resulting from a combination of alcohol and tetraethylthiuramdisulfide. Insofar as I am aware, this occurrence has not previously been reported. Withdrawal of the use of tetraethylthiuramdisulfide repeatedly resulted in subsidence of the eruption. Use of tripelennamine (pyribenzamine®) in a dosage of 50 mg. twice daily seemed to favorably influence the eruption, particularly the large cystic lesions which the use of chlorprophenpyridamine (chlortrimeton®) in dosages of 4 mg. four times daily did not noticeably affect. Further observations are necessary to determine the value and relative merits of antihistaminic drugs in controlling this type of eruption.

363 N. Elm St.

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POSTOPERATIVE ACUTE PANCREATITIS AND LOWER NEPHRON SYNDROME

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Acute pancreatitis occurring during surgery in regions remote from the biliary tract or as a postoperative complication of such surgery apparently is rare. A search of the literature has revealed only two case reports.[1] In the case which is the subject of this report the symptoms of acute pancreatitis first manifested themselves in the operating room during a transurethral resection in a patient who gave no history of gallbladder disease, who did not imbibe alcoholic beverages, and in whom at autopsy no evidence of biliary tract disease could be found. The case is of special interest because of the coexistence of the lower nephron syndrome. Although the lower nephron syndrome is not an uncommon complication of acute pancreatitis, the almost simultaneous occurrence of the two conditions in a patient subjected to transurethral resection provokes the thought that the two pathological processes may have had a common etiology and, further, that the surgical procedure may have played a directly causative role in both. Recent investigative work lends support to such a hypothesis.

REPORT OF A CASE

The patient was a 60-year-old white accountant who had enjoyed good health all his life except for the development of progressive difficulty in voiding during the two preceding years. Past history and inquiry by systems were noncontributory except for the history of occasional postprandial flatulence.

Three days prior to admission to the hospital the patient noted the onset of frequency, urgency, dysuria, fever, and malaise. A urine specimen showed many leukocytes. The symptoms responded well to the administration of sulfacetimide, but on the day of admission, Aug. 8, 1950, acute urinary retention developed. Upon admission an indwelling catheter was inserted. The patient quickly became afebrile and asymptomatic.

Physical examination was essentially negative except for enlargement (3+) of the prostate gland. A cystogram showed slight bladder trabeculation. The results of routine blood and urine studies were normal, with a hemoglobin value of 15 gm. per 100 cc., a nonprotein nitrogen level of 27 mg. per 100 cc., and only an occasional white blood cell in the microscopic examination of the urine.

On Aug. 5, 1950, three days after admission, the patient was subjected to a transurethral resection. Spinal anesthesia was employed. A total of 60 gm. of prostatic tissue were resected. A large amount of distilled water was used for irrigation. Bleeding was described as moderately severe and was well controlled by electrocoagulation. The operative procedure lasted 115 minutes. During the last 30 minutes of the operation severe epigastric pain developed, requiring the supplementary use of nitrous oxide and intravenous injection of pentobarbital (nembutal®).

The patient continued to complain of abdominal pain upon return to his room. Severe persistent nausea and vomiting developed. On the second postoperative day a slight but definite jaundice was detected. The result of a hemoglobin determination on this day was 8.25 gm. as compared with 15 gm. on admission, indicating the hemolysis of a large amount of blood. A recheck of the blood used for transfusion revealed no incompatability. The urinary output during the first postoperative day was 250 cc. A conservative plan of therapy was adopted. The patient was given 1,000 cc. of fluid per day in addition to that lost in urine and vomitus. The anemia was corrected. Aberrations in the blood chemistry were corrected as they arose. Heat was applied to the lumbar areas. As the days passed and the likelihood of spontaneous recovery diminished, the following procedures were employed: lumbar sympathetic block, intravenous administration of procaine solution, administration of benzazoline hydrochloride (priscoline®), intravenous injection of aminophylline, and finally continuous gastric lavage. Abdominal discomfort, nausea, and vomiting continued. The urinary output ranged between 55 cc. and 202 cc. The nonprotein nitrogen level climbed to 120 mg. per 100 cc. Episodes of pulmonary edema occurred. On the thirteenth postoperative day the patient died suddenly.

Autopsy.—At autopsy an extensive nonhemorrhagic pancreatitis was found with the characteristic surrounding area of fat necrosis. No abnormality was found in the liver, gallbladder, and bile ducts. The kidneys were large and swollen, with an average weight of 220 gm.

Microscopic Description of Kidneys: The glomerular tufts were atrophic in an enormously dilated capsule. Within the capsule there was an inspissated fluid. The epithelial lining was conspicuously hypertrophied. There was no thickening of the capsule and no hyalinization of glomeruli. The collecting tubules contained reddish albuminous casts and granular casts. There were marked swelling and vacuolation of the epithelial cells. Edema and a patchy distortion of the parenchyma due to proliferating fibroblasts and an accumulation of mononuclear cells were also observed.

COMMENT

It has been suggested that proteolytic enzymes released from injured tissue may be responsible for the renal damage seen in the lower nephron syndrome.[2] This hypothesis is based on the observation that a known proteolytic substance, trypsin, when injected into rabbits will cause pathological changes in the kidneys which bear a striking similarity to those observed in the kidneys of a man dying of crush injuries or burns. It is generally accepted that the proteolytic enzyme activity of trypsin is the cause of the pathological changes of acute pancreatitis.[3] Furthermore, it is known that proteolytic enzyme activity may be induced in dogs by hemorrhage, that prostate gland tissue has considerable proteolytic enzyme activity, and that during operations in man there is commonly a marked increase in proteolytic enzyme activity.[4] In view of these considerations, it would seem justified in the case under discussion, in which there was extensive resection of prostatic tissue and considerable hemolysis of blood, to propose as a hypothesis that the resulting release of proteolytic enzymes may have been responsible for both the pancreatic and the renal damage.

It is interesting that the literature on acute pancreatitis is not completely devoid of support of such a hypothesis. In a case reported by Rich [3b] acute pancreatitis developed in a 13-year-old girl shortly after she had been burned. It was suggested by the author that the administration of 5% dextrose solution may have played a role in the development of the pancreatitis. Equally valid is the suggestion that the release of proteolytic enzyme from the burned tissue caused the pancreatitis and the intra-

From the Union Memorial Hospital.

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venous administration of fluids played a contributory role through hemodilution, since dilution of plasma is one method of activating proteolytic enzyme.

In another case acute pancreatitis followed the transfusion of incompatible blood.[5] This case and the one reported here are strikingly similar. In both cases acute pancreatitis and acute renal tubular damage developed promptly after the hemolysis of a considerable amount of blood. In both there was no prior history of biliary tract disease and no evidence of biliary tract abnormality at autopsy.

The occurrence of pancreatitis in such widely varied disease entities as acute appendicitis, mumps, carcinoma of the cervix, transfusion reaction, and pyemia is explained more readily by an alteration in the chemical composition of the body than in terms of local disease of the bile or pancreatic ducts.[6] Finally, the discrete and patchy distribution of the fat necrosis of acute pancreatitis, often involving areas of the omentum and mesentery far removed from the pancreas, suggests that the necrotizing agent is blood-borne rather than liberated from ruptured pancreatic acini.

SUMMARY

A case of postoperative acute pancreatitis and lower nephron syndrome is reported. Evidence is presented which suggests that there may be a mechanism involved in some cases of pancreatitis other than the distention and subsequent rupture of pancreatic acini.

11 W. 29th St.

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METHANTHELINE (BANTHINE®) BROMIDE IN ACUTE PANCREATITIS

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Recent studies conducted by us have revealed a reduction in the external secretion of the pancreas after vagotomy performed for peptic ulcer, and marked reduction in both volume and enzyme output of pancreatic juice when a patient is under the influence of a parasympatholytic drug, such as methantheline (banthine®) bromide.[1]

In addition, Ripstein [2] has reported a reduction in mortality from 72% to 24% by preliminary vagotomy in dogs in which acute pancreatitis was produced by injection of bile and trypsin into the pancreatic duct followed by ligation of the duct. In addition, we have succeeded in the prevention of pancreatitis by use of banthine® in dogs that had pancreatic duct ligation followed by a pancreatic stimulant, such as secretin or pilocarpine. Pancreatitis occurred in every instance in a similar group of animals that did not receive banthine®. Experimental and clinical evidence would suggest that human pancreatitis in many instances is caused by pancreatic duct obstruction in combination with active pancreatic secretion. Theoretically, either removal of the obstructing factor or inhibition of pancreatic secretion would interrupt the progress of the disease process.

REPORT OF A CASE

Mrs. B. V., aged 46, entered the hospital with complaint of severe, constant epigastric pain radiating through to the back of 48 hours' duration. She had had a similar attack of pain 10 months previously. The pain was associated with severe vomiting. There was no history of chills, jaundice, vomiting of blood, or melena. A gallbladder series done prior to admission revealed a nonfunctioning gallbladder.

Physical examination on admission revealed a blood pressure of 130/80; a temperature of 100.94 F. (38.3 C.), and a pulse rate of 100. There was marked tenderness with moderate muscle spasm in the midepigastrium. The remainder of the physical examination was normal. Laboratory studies revealed a hemoglobin of 12 gm. and a white blood cell count of 14,600. Urine examination was normal. The blood amylase value was 545 Somogyi units.

The patient was given 100 mg. of banthine® bromide intramuscularly, and within 20 minutes had almost complete relief of abdominal pain. She was then given 50 mg. of banthine® in the same manner every six hours for five days. She had no further abdominal pain, and no other drugs were required for relief of pain. Forty-eight hours after her admission to the hospital, a repeat of blood amylase determination revealed 55 Somogyi units. On the 10th hospital day, because of the evidence of gallbladder disease, the patient had an exploratory laparotomy which revealed the gallbladder wall to be slightly thickened but without evidence of acute inflammation. There were small stones present in the gallbladder. The common bile duct was not dilated and contained no stones or obstruction on exploration. Examination of the pancreas revealed it to be swollen, tense, and hemorrhagic in appearance, with several areas of surrounding fat necrosis in the omentum. The gallbladder was removed. Pathological examination revealed only minimal evidence of inflammatory reaction in the wall. The patient made an uneventful recovery.

COMMENT

Three additional patients with signs, symptoms, and laboratory findings of acute pancreatitis have been treated with banthine® bromide, 100 mg. given parenterally every six hours. All have had pronounced relief of pain, rapid fall in blood amylase values, and early general improvement. This would appear to be a satisfactory way of controlling an acute attack of the disease, to be followed by a search for any obstructing factors and their subsequent removal, when evident and possible, by conventional means. When obstructing factors are not evident, inhibition of external pancreatic secretion with banthine® during the active phase of the disease would seem a logical method of management. Such treatment seems to be on a sound physiological basis, since banthine® inhibits the nerve stimulus to pancreatic secretion by blockage of the vagus, and in addition inhibits acid secretion of the stomach, which is the chief mediator of hormonal stimulation of the pancreas.

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From the Department of Surgery, The Duke University School of Medicine.

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PROCEDURE FOR BLOOD TRANSFUSION IN HEART DISEASE AND IN ELDERLY SUBJECTS

ADMINISTRATION OF SEDIMENTED ERYTHROCYTES WITH PATIENT SITTING UPRIGHT

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In situations requiring transfusion of large amounts of blood, a practical difficulty is frequently imposed by associated disorders which restrict the ability of the heart to accommodate to an increased blood volume. Among the latter are various types of heart disease, nephritis, and toxemias of pregnancy and old age, generally, in which cardiac reserve is limited.

Shock and anemia of marked degree significantly affect the heart of an aged patient and may cause coronary insufficiency with accompanying myomalacia.[1] Pernicious anemia often affects those of advanced years among whom coronary artery disease is prevalent, and the latter condition necessitates caution if rapid replacement of normal blood values by transfusion is indicated.

The frequency of complicating conditions in the administration of transfusions among the various services at the Kings County Hospital has led to the development in the blood bank of a simple procedure that lends itself to universal employment.

PROCEDURE

Red blood cells are allowed to settle in the bottles in the refrigerator. If not disturbed for approximately 48 hours, the cells settle so that there is about 300 to 350 cc. of red blood cells to 250 to 300 cc. of plasma. With the aid of an empty vacuum bottle the plasma can be siphoned off in a few minutes.

The table presents an analysis of the sodium content of the siphoned plasma and of the residual blood (determined by flame photometric analysis), and the hemoglobin values of the sedimented blood. In five of the 16 cases, washing of sedimented blood cells removed only minimal additional quantities of sodium so that no practical advantage is gained by this involved procedure.

The sedimented blood was administered with the use of gravity at an elevation of 4 ft. by means of an 18- or 17-gage needle, and with the patient in the sitting posture. Flow was adjusted at the rate of 3 to 4 cc. per minute. Usually a total of 250 to 350 cc. of sedimented erythrocytes was administered at one time.

COMMENT

The procedure described possesses a number of important advantages.

1. The total volume of fluid administered intravenously is reduced by practically half. Several investigators who have used concentrated red blood cell suspensions have emphasized this advantage.[2]

2. Fully three-quarters of the sodium content is eliminated by transfusion of sedimented red cells. The average amount of sodium eliminated in the discarded fraction totaled 967.41 mg. in the cases analyzed in the table. The administration of sodium is interdicted in patients with heart disease, preeclamptic and eclamptic toxemia, and lower-nephron nephrosis in the anuric stage.

Analysis of Sodium Content of Plasma and Sedimented Red Cells

	Plasma		Sedimented Red Cells		
	Quantity Removed, Cc.	Sodium Content, Mg./100 Cc.	Quantity Given, Cc.	Sodium Content, Mg./100 Cc.	Hemoglobin, Gm./100 Cc.
1.	270	345.5	350	152	20
2.	250	376	290	139	21
3.	260	352	330	99.5	21
4.	270	342	320	106.2	23
5.	340	340	300	105	22.5
6.	270	350	330	136	21.3
7.	300	360	310	122.5	20.4
8.	270	356	310	157	18.6
9.	250	370	300	129	19.2
10.	300	366	300	118.5	19.9
11.	250	374	340	114	20.8
12.	240	360	350	116 84 *	19.4 23.6 *
13.	250	364.5	310	132.5 109.5 *	18.3 22.9 *
14.	260	354	310	125 106 *	19.7 21.5 *
15.	270	364.5	340	117 105 *	20.3 21.5 *
16.	300	355	270	114.5 83 *	20.9 22.9 *
Average	270	358.3	316	123.8	20.3

* Amount after washing.

3. Transfusion, traditionally, has been given to patients in the recumbent position, in which the rapid return of augmented blood volume to the heart has predisposed to pulmonary edema. This is averted when the patient is placed upright in a chair during the transfusion. During the past two years in which this transfusion technique has been employed, none of the patients had dyspnea or pulmonary edema.

In circumstances necessitating transfusion of large amounts of red blood cells, partial exchange transfusions may be performed, whereby the patient's whole blood is removed and replenished by sedimented red cells. Subsequently, the patient's own erythrocytes are returned after sedimentation has occurred and the plasma has been removed.

It is important to distinguish between the administration of sedimented red blood cells and packed red blood cells. Preparation of packed erythrocytes requires centri-

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fugation, and centrifuges accommodating large containers of blood of various sizes and shapes are not generally available.

SUMMARY

A simple procedure is described providing safeguards in the administration of blood to elderly patients and to persons with heart disease and associated disorders, in which introduction of a large volume of fluid into the circulation is hazardous. This consists of administration of sedimented red cells with the patient in a sitting position. Fully three-quarters of the sodium content of whole blood is removed by this technique.

25 Lefferts Ave. (Dr. Gubner).

GANTRISIN® (SULFISOXAZOLE)-INDUCED GRANULOCYTOPENIA

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Gantrisin® (3,4-dimethyl-5-sulfanilamido-isoxazole, also known as sulfisoxazole, and NU-445) is a relatively new sulfonamide which is now being widely used in the treatment of various bacterial infections, particularly those of the urinary tract. Recently, a case of agranulocytosis following the administration of this drug was reported.[1] In a careful examination of the literature, the authors of this report were able to find only eight instances in which use of the drug had led to leucopenia.[2] Most of the other investigators have emphasized the low toxicity of the compound. We wish herewith to report another instance of bone marrow depression presumably caused by gantrisin,® in order to reemphasize the possible dangers inherent in its use.

REPORT OF A CASE

E. L., aged 74, was first seen at the Research and Educational Hospitals, University of Illinois, for surgical treatment of benign prostatic hypertrophy and chronic pyelitis. At the time of his first admission, the white blood cell count was 12,400 cells per cubic millimeter. Postoperatively, the patient did well, receiving penicillin, streptomycin, and aureomycin.

One month after discharge, one course of gantrisin® lasting 24 days (4 gm. per day in divided doses) was given in an attempt to control a continuing, moderately severe pyuria. This treatment was only partially successful, but the number of leucocytes in the urine diminished considerably. About two months later, a recrudescence of the pyuria led to a second similar course of gantrisin,® lasting one week. The sulfonamide was then replaced by aureomycin hydrochloride (2 gm. per day) for one week, and finally the use of aureomycin was discontinued, and gantrisin® was given again.

Two weeks after the institution of the third course of gantrisin,® and three days prior to the patient's second admission to the hospital, marked pharyngitis, laryngitis, and dysphagia developed. The temperature rose to 103 F., and examination of the blood showed a white cell count of 2,600 per cubic millimeter, with 36% neutrophils and 64% lymphocytes. Gantrisin® was immediately discontinued. Four hundred thousand units of penicillin procaine was given, and the patient was admitted to the Research and Educational Hospitals.

On admission, the patient stated that he was already improving. Physical examination showed the pharynx to be markedly inflamed, with multiple small ulcers covered by a yellowish membrane on the posterior pharyngeal wall, tonsillar pillars, and soft palate. His voice was hoarse and swallowing was difficult. The rest of the physical examination contributed nothing, and only a few pus cells and a trace of protein were found in the urine. Blood chemistry values were within normal limits, blood culture was sterile, and nose and throat cultures revealed no pathogenic organisms.

At the time of admission, the blood leucocyte count had risen to 5,700 cells per cubic millimeter, the erythrocyte count was 4,600,000 cells per cubic millimeter, the hematocrit value was 39%, and the sedimentation rate was 35 mm. per hour, corrected (Wintrobe). The differential leucocyte count showed neutrophilic myelocytes 1%, neutrophilic metamyelocytes 3%, stab forms 64%, polymorphonuclear neutrophils 9%, lymphocytes 7%, and monocytes 16%. The bone marrow was described as "cellular, with a marked left 'toxic' shift in the myeloid series; erythroid and megakaryocytic elements normal."

Mixed penicillin G and penicillin procaine, 3,200,000 units per day, was given for one week. The pharyngitis and laryngitis rapidly cleared, both objectively and subjectively, and a repeat blood examination nine days after admission showed a white blood cell count of 8,200 per cubic millimeter with 67% polymorphonuclear neutrophils, 28% lymphocytes, 4% monocytes, and 1% basophils. The neutrophils uniformly contained basophilic stippling. Fourteen days after admission the white cell count was unchanged, with 78% polymorphonuclear neutrophils, 16% lymphocytes, and 6% monocytes. All the cells showed normal morphological characteristics. The urine at this time contained only 1 or 2 leucocytes and no protein, and the patient was discharged.

It would appear that the administration of gantrisin® was followed by a severe granulocytopenia with formation of so-called toxic granules in the cells of the myeloid series. Fortunately, the condition was recognized at an early date and the medication discontinued with rapid subsequent recovery. The possibility that a drug sensitivity may develop after repeated use of a given drug must always be borne in mind when one is dealing with new agents, particularly those of the sulfonamide group.

The possibility that rest periods between courses of therapy with a given drug are important in the development of sensitivity is of some interest. In this respect, the observations of Dowling and Lepper and of Lyons and Balberor [3] are important. These authors demonstrated a threefold increase in incidence of drug reactions accompanying a second course of therapy with a given sulfonamide.

SUMMARY

A case of granulocytopenia following administration of gantrisin,® with rapid recovery following discontinuation of the medication and institution of penicillin therapy in massive doses, is described.

1853 W. Polk St.

From the medical service of Robert W. Keeton, M.D., Research and Educational Hospitals, University of Illinois.

1. Haunz, E. A.; Cardy, J. D., and Graham, C. M.: Agranulocytosis Due to Gantrisin: Report of a Case with Recovery, J. A. M. A. **144**: 1179 (Dec. 2) 1950.

2. Lazarus, J. A., and Schwarz, L. H.: A Clinical Study of a New Sulfonamide (NU-445) in the Treatment of Urinary Tract Infections, J. Urol. **61**: 649 (March) 1949. Thompson, H. T.: A Clinical Evaluation of Gantrisin (NU-445), ibid. **62**: 892 (Dec.) 1949.

3. Dowling, H. F., and Lepper, M. H.: "Drug Fever" Accompanying Second Courses of Sulfathiazole, Sulfadiazine, and Sulfapyridine, Am. J. M. Sc. **207**: 349 (March) 1944. Lyons, R. H., and Balberor, H.: Febrile Reactions Accompanying the Readministration of Sulfathiazole, J. A. M. A. **118**: 955 (March 21) 1942.

HEMORRHAGIC BULLOUS URTICARIA TREATED WITH CORTICOTROPIN

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Hemorrhagic bullous urticaria fortunately is rare. It is a serious reaction because it is usually associated with visceral involvement, and it may end fatally.[1] We have recently seen a case which had a favorable course and believe credit for this should be given to corticotropin (ACTH).

REPORT OF A CASE

A white man, aged 46, was seen by one of us (G. M. L.) on Aug. 14, 1950, because of cellulitis of the left leg extending from the midtibial region to the knee. He was given 400,000 units of depot penicillin G in peanut oil daily for five days. Ten days later generalized urticaria developed which did not respond to orally administered antihistaminic drugs. On Aug. 27, 1950, he was given a subcutaneous injection of 0.5 cc. of epinephrine 1:1,000, which caused pallor, profuse sweating, and tachycardia, but which had no effect on the urticaria. He was then given ephedrine hydrochloride orally, also without any pronounced therapeutic result. When seen again four days later, in addition to the urticaria there were multiple bullous lesions 3 to 5 cm. in diameter on the trunk and upper extremities, and numerous cutaneous hemorrhagic areas with a similar distribution. There was also a brawny edema of the arms, legs, chest, and face, especially marked in the lower lip and periorbital areas. The patient was hospitalized on Aug. 31, 1950. The temperature on admission was 101.4 F., pulse 98, and respirations 20. The white blood count was 4,550 at this time with the following differential: eosinophils 1, lymphocytes 12, monocytes 5, segmented polymorphonuclears 2, nonsegmented polymorphonuclears 60. The red blood cell count was 5,060,000 with a hemoglobin value of 15.8. The urine pH was 6.5, specific gravity 1,023, with 1+ albumin. The blood urea nitrogen was 14 mg. per 100 cc.

For the intense pruritus the patient was given an intravenous drip of 500 cc. of 0.1% procaine in isotonic saline, but with slight relief. It was then decided to administer 20 mg. of corticotropin intramuscularly every six hours. During the next 36 hours he complained at times of cramp-like abdominal pain. At no time was there any evidence of hemorrhage from either the gastrointestinal or urinary tract. He also complained of a sore throat, but no lesions were seen. After two days of therapy, no new bullae or hemorrhages appeared, and dosage of corticotropin was reduced on the sixth day to 10 mg. every six hours, and then 20 mg. daily for two days. The edema subsided gradually and was completely resolved on the fourth day. The bullae did not rupture, but dried by the fourth day. On the eighth day the patient was discharged, and has remained asymptomatic except for an occasional urticarial wheal.

COMMENT

Previously this patient had received penicillin parenterally in December, 1945, and in February, 1950, because of throat infections, as he had had rheumatic fever with residual mitral and aortic valve involvement, well-compensated. He had also used penicillin dust inhalations frequently during the previous two years for colds, without any toxic or allergic reaction. He had used a sulfonamide nose spray intermittently for about two years until April, 1945, when joint pains, which by exclusion proved to be due to the sulfonamide, developed.

CONCLUSIONS

A reaction to penicillin resulting in hemorrhagic bullous urticaria is reported.

The patient's condition was not improved by antihistamines, by ephedrine administered orally, or by subcutaneous epinephrine 1:1,000.

The bullous and hemorrhagic lesions cleared with the administration of corticotropin (ACTH).

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From the Allergy Department of Michael Reese Hospital.

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COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

This paper is one of a series requested by the Council on National Emergency Medical Service to inform the medical profession on problems pertaining to civil defense. It does not necessarily reflect, however, the opinions of the Council or of any other official body unless so stated in the article.

C. JOSEPH STETLER, *Secretary.*

ATOMIC BOMB INJURY: MECHANICAL INJURIES

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One-half to three-fourths of the casualties surviving an atomic bomb explosion over a metropolitan area can be expected to have incurred mechanical injuries. These are likely to be multiple and may be associated with burns and with the effects of nuclear radiation. Otherwise, there is nothing in the treatment of these wounds which sets them apart from those encountered daily in surgical practice. Any plan for the management of casualties in the event of an atomic bomb attack, however, must be conditioned by the fact that wounds will occur in overwhelming numbers. In addition, there will be widespread destruction of physical facilities. It is early after an atomic bomb attack that panic and confusion may exist, and it is during that time that previously made plans for the management of mass casualties will be most effective. In this paper, therefore, the early rather than the subsequent care of the wounded will be discussed from the point of view of the safest and most expeditious way of handling casualties in large numbers. The logistics and the management of injuries peculiar to an atomic bomb explosion have been described in previous articles of this series.[1]

The pressure wave resulting from an atomic bomb explosion is longer in length and in duration than that set

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1. (*a*) Sargent, J. C.: Civil Defense Organization and Medical and Health Services in Civil Defense, report to the Council on National Emergency Medical Service, J. A. M. A. **145**: 897-900 (March 24) 1951. (*b*) Long, P. H.: Local Tactical Planning and Logistics in Medical Aspects of Civil Defense, report to the Council on National Emergency Medical Service, ibid. **145**: 979-983 (March 31) 1951. (*c*) Lyon, G. M.: Radiological Aspects of Civil Defense, report to the Council on National Emergency Medical Service, ibid. **146**: 465-471 (June 2) 1951. (*d*) Evans, E. I.: Atomic Burn Injury, report to the Council on National Emergency Medical Service, ibid. **145**: 1342-1345 (April 28) 1951. Evans, E. I.: The Burn Problem in Atomic Warfare, ibid. **143**: 1143-1146 (July 29) 1950.

V 14
1951

up by an explosion of a conventional nitroglycerine bomb. Except very close to ground zero, however, it does not reach the intensity of pressure needed to injure gas-containing organs (ears, gastrointestinal tract, lungs). The minimal pressure that will produce direct blast injury is generally taken to be 35 lb. per square inch, and this is not encountered outside a radius of 1,000 ft. (304 m.) from the detonation of an atomic bomb of the type used at Hiroshima and Nagasaki. Within this radius, almost complete destruction is expected. Survivors with direct effects of blast, therefore, will be encountered only exceptionally, if at all. None were noted among survivors at Hiroshima and Nagasaki.

Indirect injuries, on the other hand, will be encountered in great numbers. The collapse of buildings and shelters, flying debris, and especially flying glass will cause a large number of mechanical wounds. If a bomb similar to those dropped over Hiroshima and Nagasaki is used over a metropolitan area, mechanical injuries of varying degrees of severity can be expected in an area of some 200 to 300 square miles (500-775 sq. km.) about ground zero.[2] Leader-Williams and Smith [2] have estimated that with a population density of 43 persons per acre in houses, there would be 27,400 killed and 25,900 wounded. This number of casualties, which might be at least doubled in a daytime attack over an industrial center, would certainly overtax standard facilities even if they were not demolished. It is imperative that careful plans be formulated for the effective use of local and neighboring medical facilities in such an eventuality, in order to provide a maximum of medical care with a minimum of confusion.

GENERAL CONSIDERATIONS

Triage.—Time, materials and personnel are spared by careful triage of casualties at collecting points [1b] set up in locations determined by factors such as the safety for personnel and the availability of routes for evacuation. The casualties reaching these points are segregated into severely wounded and lightly wounded. The former are evacuated to installations (regular hospitals which escaped destruction or improvised hospitals in factories, schools, etc.) only a litter carry or short ambulance ride away, where definitive surgery can be done. The lightly injured are evacuated to remote homes or hospitals for treatment. Only emergency treatment can be accomplished at collecting points. Resuscitation for severe shock can be started; hemorrhage can be stemmed; an open wound of the thorax can be converted into a closed one. Mature judgment by experienced personnel must be exercised at these points. It is desirable to designate certain installations as centers where certain types of wounds may be collected and treated.

Relief of Pain.—The majority of casualties can be made quite comfortable by first-aid treatment and do not require narcotics for pain. Fear, anxiety, and mental anguish are commonly mistaken for pain. They should be distinguished from the latter for they are treated differently.[3] Where pain is not an important factor in the clinical picture, small doses of barbiturates along with reassurance are safer and more effective than morphine. When pain is present, morphine or a similar narcotic should be used; but, as emphasized by Beecher,[4] certain features concerning the use of narcotics and other drugs shortly after wounding should be borne in mind:

1. The administration of a sedative (barbiturate) along with morphine renders the latter more effective.

2. In the presence of shock, drugs should be administered intravenously instead of hypodermically or intramuscularly. Failure of absorption from the skin or muscles renders the drugs ineffective. Moreover, if injection is repeated, dangerous overdosage may occur when the circulation is restored and absorption has returned to normal.

3. Among adults, an average dose of morphine hydrochloride (10 mg.) is usually as effective as larger amounts and has fewer side-effects. Except among addicts, it is seldom necessary to administer as much as 15 mg.

While morphine is an unquestioned godsend for the sick in pain, its misuse, aside from the question of addiction, has done more harm than good. Whether or not to stockpile morphine or its derivatives and substitutes and to make it readily available to non-medical rescue squads for use in case of civilian catastrophe deserves serious consideration. It is questionable whether narcotics should be used indiscriminately forward of the collecting points.

Wound Shock. — Number Requiring Treatment: Leader-Williams and Smith [2] estimated that an atomic bomb explosion similar to that at Hiroshima might result in 14,900 seriously injured casualties requiring treatment. In the Texas City disaster,[5] 800 of approximately 4,000 casualties were injured severely enough to warrant hospitalization. From this experience, it might be expected that one out of five of the casualties from an atomic attack would require treatment for wound shock. The enormous magnitude of the problem is obvious.

Manifestations: The clinical picture and the pathologic physiology of traumatic shock among casualties of an atomic bomb attack will differ in no way from that observed among battle casualties in World War II [6] or, for that matter, from that observed to result from an automobile accident. The fundamental abnormality in traumatic shock is oligemia. The manifestations are modified by the wound itself, the reactivity of the individual, and the treatment he has received. If the wound is not properly treated, infection may alter the picture. The oligemia of traumatic or wound shock results from the loss of whole blood from the circulation. After a few hours, most patients in traumatic shock show hemodilution in the active circulation. In contrast, patients with severe burns and with the crush syndrome show hemoconcentration. Oligemia in these patients results from the loss of plasma.

Correction of Oligemia: The management of wound shock requires correction of the oligemia, usually by

2. Leader-Williams, E., and Smith, J.: Medical Aspects of Atomic Warfare: Assessment of Possible Casualties and Damage, Practitioner **165**: 594-602 (Dec.) 1951.

3. Beecher, H. K.: Pain in Men Wounded in Battle, Ann. Surg. **123**: 96-105 (Jan.) 1946.

4. Beecher, H. K.: Early Care of the Seriously Wounded Man, J. A. M. A. **145**: 193-200 (Jan. 27) 1951.

5. (*a*) Blocker, V.: The Texas City Disaster: The Pattern of Injury in 3,000 Casualties, Tex. Rep. Biol. & Med. **7**: 22-32 (Spring) 1949. (*b*) Blocker, V., and Blocker, T. G., Jr.: The Texas City Disaster: A Survey of 3,000 Cases, Am. J. Surg. **78**: 756-771 (Nov.) 1949.

6. Beecher, H. K.; Simeone, F. A.; Burnett, C. H.; Shapiro, S. L.; Sullivan, E. R., and Mallory, T. B.: The Internal State of Severely Wounded Man on Entry to the Most Forward Hospital, Surgery **22**: 672-711 (Oct.) 1947.

replacement of whole blood, and treatment of the wound. Among the severely wounded, vigorous resuscitation is started when the casualty is first seen and precedes wound management except when the nature of the injury makes resuscitation ineffective, as in concealed bleeding or gastrointestinal perforation. Under these circumstances, it may be necessary to undertake wound surgery promptly as a vital part of resuscitation.

In the event of an atomic bomb explosion, blood will be a scarce commodity. As a conservative estimate in a catastrophe of this magnitude, 10,000 pints of blood would be required during the first 48 hours; and most of this, if available, would be used during the first 12 to 24 hours. For the greatest economy in the use of blood, as well as for the best interest of the patient, resuscitation must be conducted rapidly to permit wound surgery as soon as possible. Beecher [4] considers casualties ready for operation when:

1. The systolic blood pressure has already reached 85 mm. of mercury and is rising.
2. The pulse rate is falling.
3. The skin is warm.
4. Good color has returned to the mucous membranes.

Resuscitation is continued during the operative procedure according to indications for the particular case.

Degrees of Oligemia: While the correction of oligemia is guided by the patient's physiologic reactions, it is well to keep in mind the probable degrees of oligemia with which one is dealing. A normal adult may lose 15% of his normal blood volume without showing signs of shock. A casualty in severe shock, however, may have lost 50% or more of his blood volume. Mild degrees of shock may be associated with losses of 25 to 35% of the circulating blood. These values are useful as approximations for planning and not as absolute volumes which must be replaced invariably for casualties in shock.

Failure of Resuscitation: The preparation of casualties for surgery in the shock ward of a receiving hospital should be under the direction of an experienced physician or surgeon in constant attendance. He will be in the best position to determine when resuscitation has corrected shock sufficiently to make surgery safe. It is hoped that the diagnosis of irreversible shock will never be made and the patient therefore abandoned, because failure of resuscitation is often due not to irreversibility but to unrecognized bleeding, head injury, tension pneumothorax, massive fat embolism, atelectasis, or fulminating infection.

Stockpiling of Blood and Blood Plasma.—Whole blood cannot be stockpiled in sufficient quantities for a mass catastrophe. There is no substitute for whole blood, but use of blood plasma is a beneficial expedient until blood is available. In the case of burns and the crush syndrome, plasma can be used exclusively. When properly processed, blood plasma is safe and can be stockpiled in strategic areas. It, too, will be a rather scarce commodity. A constant search is therefore being made for other substances which can be used to expand the plasma volume such as gelatin, globin, dextran, and polyvinylpyrrolidone ("periston"). Since the effectiveness and metabolic fate of these substances is still being investigated, the storage of large quantities for mass casualties is scarcely advisable at this time.

Oral hypotonic salt solutions have been recommended for patients in shock.[7] This can apply only to the lightly injured, for the severely wounded should not be fed solids or liquids before surgery. In any event, assimilation would be poor. In fact, though thirsty, patients in shock would vomit fluids taken by mouth; and this is especially true in burn shock where, theoretically, such solutions might be most useful.

Management of the Open Wound.—The principles of resuscitation and the care of open wounds among mass casualties are directed toward the restoration of disturbed physiology and the conversion of the contaminated or infected wound to one which will granulate without infection and which can be closed within as short a period of time as possible. Timing is important, especially among casualties in which open wounds may exist in addition to exposure to radiation. As Pearse and Payne [9] have pointed out, it is well to have such wounds healed within two weeks, because after that time the effects of ionizing radiation on the healing properties of tissues may seriously interfere with recovery.

In the event of a major catastrophe, wounds must be treated according to a master plan based upon simplicity and effectiveness. Churchill [10] described such a plan in a paper as timely now as it was then, based upon active experience in World War II. He divided the surgical care of the wound into three phases: initial, reparative, and reconstructive. Initial surgery is done as soon as possible after injury, often as a part of resuscitation itself. Reparative surgery aims to close the wound and to effect healing without infection and with minimal scarring. Ideally, this is accomplished 5 to 10 days after wounding. Reconstructive surgery is done electively weeks or months later in order to effect accurate anatomic restoration and to improve the function of tissues spared from injury. Reparative and reconstructive surgery need not be discussed here, for by the time the patient is ready for them, the acute emergency arising from the atomic explosion is over. By that time, casualties are well dispersed and treatment can proceed according to generally accepted surgical principles.

Débridement of Wounds.—Débridement is the essential feature of initial surgery for victims of a mass catastrophe. By definition, this operation consists of the removal of traumatized, contaminated tissue. All grossly devitalized tissue is removed. Complementary incisions must be made along natural planes and must be adequate for exposure of the depths of wounds. Most serious infections arise from foreign material or devitalized tissue overlooked when débridement has been cursory and superficial. Large foreign bodies should be removed, but it is unreasonable to spend hours seeking minute foreign bodies. Casualties with small pieces of imbedded foreign

7. Scheele, L. A.: Saline Solution in Treatment of Burn Shock, Ohio M. J. **46**: 1171-1172 (Dec.) 1950.
8. Deleted on proof.
9. Pearse, H. E., and Payne, J. T.: Medical Progress: Mechanical and Thermal Injury from the Atomic Bomb, New England J. Med. **241**: 647-653 (Oct. 27) 1949.
10. Churchill, E. D.: The Surgical Management of the Wounded in the Mediterranean Theater at the Time of the Fall of Rome, Ann. Surg. **120**: 268-283 (Sept.) 1944.

V 14
1951

material should be watched carefully for the development of serious anaerobic infection. The wound is covered with a simple dressing which, barring complications, is not removed until the patient is in the operating room for secondary closing of the wound. This practice spares personnel and avoids secondary infection.

With few exceptions débrided wounds must be left unsutured because it is impossible to be certain that all devitalized tissue has been removed at the time of débridement. Well débrided wounds will be ready for closure by the 5th to 10th day. By that time any devitalized tissue which had been left behind is easily identified and can be excised before closure.

While concessions should not be made to problems of plastic closure of wounds, it is useless to sacrifice skin needlessly, and incisions for exploring the depth of wounds should be planned so that secondary closure may be facilitated. Cruciate incisions and incisions over bony prominences should be avoided. Large muscles, blood vessels, and nerves should not be transected; and vital structures should be spared.

Antibiotic and chemotherapeutic agents are useful adjuncts to careful wound surgery. There is little, if any, evidence that such agents are useful locally.[11] They will not sterilize the poorly débrided wound and they are not needed locally in the well-débrided wound. Even after thorough débridement open wounds should be considered contaminated, and antibiotics should be used systemically as adjuvants to good surgery. Penicillin is useful not only for this purpose but also for protecting a patient whose hematopoietic system may have sustained injury from exposure to ionizing radiation.

Anesthesia in Mass Casualties.—This subject has been covered very well in a recent paper by Beecher,[4] and it need not be detailed again here. It is important to emphasize that most patients with simple wounds can be treated with local anesthesia, nerve block, nitrous oxide, or thiopental (pentothal*) sodium. The last is contraindicated in patients in actual or impending shock and in patients with injuries about the neck. For major procedures ether anesthesia with or without nitrous oxide induction remains the easiest and safest. Curare and its derivatives should not be used under the conditions which will probably exist where initial surgery is done.

SPECIFIC INJURIES

Crush Syndrome.—In a catastrophe where collapse of buildings takes place, a number of casualties will be trapped beneath rubble, timbers, and masonry.[12] The ischemia from pressure upon major blood vessels results in biochemical changes within striated muscle so that upon release of pressure and reestablishment of the blood supply, myohemoglobin and other compounds are liberated into the circulation. In man, through mechanisms which are not yet clearly understood, this results in injury to the kidney with ensuing degrees of oliguria and anuria. Death owing to renal failure is common. This has been called the "crush syndrome." [13] It was not observed in the Texas City disaster of 1946,[5b] nor was it described among casualties at Hiroshima and Nagasaki.[14] It was common, however, among the injured rescued from collapsed buildings during the Battle of Britain [12] and was seen under similar circumstances among battle casualties in World War II.[13a]

Bywaters [12] recommended the administration of substances at the time of rescue which would produce an alkaline reaction in the urine, on the basis that acid urine would cause precipitation of myoglobin or its derivatives and would lead to anuria by tubular blockage. This possibility has not been adequately tested, since such casualties have not been "alkalized" before rescue. However, when alkalization has been attempted shortly after release from the compression or during the period of oliguria and anuria, alkalization has not been effective.[13a] Doubt is cast upon the theoretical value of alkalization by experience in the management of blackwater fever and other related conditions.[13b,c]

It has been suggested that compression bandages may be useful in prophylaxis.[13d,e] They can be applied to the ischemic limbs easily by first-aid men trained in the management of such cases. Amputation of affected limbs is not recommended for prophylaxis. By the time cases which would be helped by it are recognized, damage will already have been done to the kidneys, and amputation would be ineffective.

Clinically and pathologically, there is no distinction between the anuria which is part of the crush syndrome and that which follows other forms of trauma and shock or incompatible blood transfusion and reactions to toxic agents. No method for inducing diuresis has thus far proved effective.[13b] The treatment of such casualties has been described by Burnett and associates [13f] and by Strauss.[13g] Essentially, overhydration and salt administration must be avoided, and insofar as possible, the caloric requirements should be provided in the form of carbohydrate.

Head Injuries.—There is no information concerning the incidence of head injuries among the casualties at Hiroshima and Nagasaki. Among some 4,000 casualties from the Texas City disaster [5a] there were over 200 patients with head injuries, most of whom had experienced periods of unconsciousness varying from a few moments to 48 hours. Thirty-five had sustained fractures of the skull. Following an atomic bomb explosion over a metropolitan area, one might expect 25 to 50 times this number of patients with head injuries, at least one-quarter of whom would require hospitalization. Except for general

11. Certain serous-lined cavities, such as the joints and thorax, are thought to be exceptions to this rule. On the basis that antibiotics do not actively enter these spaces, these drugs have been instilled locally at the time of initial surgery as well as administered systemically.

12. Bywaters, E. G. L.: Ischemic Muscle Necrosis: Crushing Injury, Traumatic Edema, the Crush Syndrome, Traumatic Anuria, Compression Syndrome, A Type of Injury seen in Air Raid Casualties Following Burial Beneath Debris, J. A. M. A. **124**: 1103-1109 (April 15) 1944.

13. (*a*) Simeone, F. A.; Mallory, T. B.; Burnett, C. H.; Shapiro, S. L.; Beecher, H. K.; Sullivan, E. R., and Smith, L. D.: V. The Crush Syndrome in Battle Casualties, Surgery **27**: 300-319 (Feb.) 1950. (*b*) Foy, H.; Altmann, A.; Barnes, H. D., and Kondi, A.: Anuria: With Special Reference to Renal Failure in Blackwater Fever, Incompatible Transfusions, and Crush Injuries, Tr. Roy. Soc. Trop. Med. & Hygiene **36**: 197-238 (Jan.) 1943. (*c*) Maegraith, B. G., and Havard, R. E.: Dangers of Intensive Alkali Treatment in Blackwater Fever, Lancet **2**: 338-339 (Sept. 9) 1944. (*d*) Patey, D. H., and Robertson, J. D.: Compression Treatment of Crush Injuries of Limbs, ibid. **1**: 780-782 (June 21) 1941. (*e*) Corcoran, A. C., and Page, I. H.: Post-Traumatic Renal Injury: A Summary of Experimental Observations, Arch. Surg. **51**: 93-101 (Sept.) 1945. (*f*) Burnett, C. H.; Shapiro, S. L.; Simeone, F. A.; Beecher, H. K.; Mallory, T. B., and Sullivan, E. R.: Post-Traumatic Renal Insufficiency, Surgery **22**: 994-1028 (Dec.) 1947. (*g*) Strauss, M. B.: Acute Renal Insufficiency Due to Lower-Nephron Nephrosis, New England J. Med. **239**: 693-700 (Nov. 4) 1948.

14. Leroy, G. V.: The Medical Sequelae of the Atomic Bomb Explosion, J. A. M. A. **134**: 1143-1148 (Aug. 2) 1947.

resuscitative measures, it is best to evacuate patients with head injuries directly and as expeditiously as possible to installations where neurosurgeons are available and definitive treatment can be accomplished.

Eye injuries are commonly associated with wounds of the head. Initial treatment should be conservative. Solutions containing atropine should not be instilled into the conjunctival sack. Enucleation should be done only when the irreparably damaged eye has to be removed as a part of adequate débridement. It should not be done without expert advice. Sympathetic ophthalmia is not a problem during the phase of management included under "initial surgery." This serious complication seldom occurs before a week or ten days from the time of injury, and there is some evidence that with the use of antibiotics it is to be feared less than it was a decade ago.

Wounds of the Chest.—Penetrating and crushing wounds of the chest require special mention because simple procedures may be life-saving in many instances. The need for the arrest of hemorrhage and for the correction of disturbed cardiopulmonary physiology constitute acute emergencies. Hemorrhage from penetrating wounds and from fractured ribs may be concealed and may occasionally lead to hemorrhagic shock and death without producing respiratory embarrassment. Bleeding within the thorax, often from an intercostal artery, should therefore be suspected when there is traumatic shock without trauma elsewhere. Air and blood should be aspirated from the chest when present in significant amounts. Continued rapid bleeding into the chest requires open thoracotomy.

Sucking Wounds: Cardiorespiratory balance is disturbed dramatically by three conditions: (*a*) the open chest ("sucking wound" of the chest), (*b*) tension pneumothorax, and (*c*) crushed or "stove-in" thorax. The emergency treatment for the sucking wound of the chest is immediate closure by any available means, whether it be by gauze pack, petrolatum gauze and adhesive, or even the flat of the hand. More adequate closure can be effected at the time of débridement when the patient reaches the first hospital installation away from the collecting point.

Tension Pneumothorax: Tension pneumothorax can be responsible for shock by interfering with the cardiac output, and dramatic improvement results from release of pressure by a needle inserted through the second or third interspace anteriorly. It is essential to keep this possibility in mind as a cause of shock. Once thought of, the diagnosis and treatment are easy. The needle can be connected to a water-seal or can be fitted with a rubber-dam flutter valve.

Rib Fractures: Forceful blows against the chest from flying blunt missiles or from collapsing walls and ceilings may result in fractures of the rib cage with interruption of the continuity of individual ribs in two or more places. The injury may produce traumatic asphyxia from the sudden increase in venous pressure. If the casualty does not succumb from serious injury to the intrathoracic viscera, severe respiratory embarrassment may result from the loss of fixation and the paradoxical movement of the damaged section of the chest wall. Pendulum movement of air from one lung to the other increases the dyspnea and cyanosis. Pain with respiration further impairs the effort of the patient to breath, increases the dyspnea, and promotes the development of atelectasis.

Patients with traumatic asphyxia can be relieved by measures which abolish respiratory pain and which correct the paradoxical motion of the chest wall. The former can be accomplished by procaine block of the involved intercostal nerves. The latter can sometimes be accomplished by adhesive strapping over a firm gauze pack. When more than five or six ribs are involved, it becomes necessary to immobilize them either by wiring the fractured ends together or by grasping them securely in hooks at both ends of the intermediate segment and placing them on traction.

Vascular Injuries.—The incidence of injuries to large blood vessels in a catastrophe such as an atomic bomb explosion is not known. That some would occur as the result of flying glass and other secondary missiles is to be expected. Actual or suspected injury to important vessels should be noted, and the casualty should receive high priority for surgical treatment. There is nothing unique about vascular wounds to be expected after an atomic explosion. They will resemble those incurred in warfare and will present the same problems of management.[14a] Nerve injuries will be commonly associated with wounds of the blood vessels. Other than noting their presence, the treatment of wounds of the nerves themselves should be delayed for some three weeks.

Mild to moderate bleeding can usually be controlled by means of a well-applied dressing. The tourniquet should be reserved for the control of serious hemorrhage. Rescue squads should be carefully instructed in its use, however, for more harm than good can come from its misuse. Special and elaborate tourniquets are not necessary. The most serviceable tourniquet is the soft but strong piece of rubber tubing of sufficient length to enable one to wind it three or four times around an adult's thigh. When necessary, the tourniquet should always be applied with sufficient tension to occlude arterial circulation. The classic rule that tourniquets be released every 20 or 30 minutes should be abandoned.[15] The tourniquet should be removed, of course, as soon as definitive surgery can be done; but until then, it may be left on for at least an hour and up to two hours before release is necessary. It should be released in the presence of a physician who can determine whether the bleeding can be controlled simply by the application of a firm dressing or whether the tourniquet needs to be reapplied. It should never be released, regardless of time, in patients who are in shock unless resuscitation with blood replacement is well under way.

Fractures.—Eleven per cent of the casualties admitted to the Ninoshima Hospital in Hiroshima after the atomic bomb explosion sustained fractures.[14] Roughly the same proportion was found in the Texas City disaster.[5] One hundred thirty-three of the Texas City casualties admit-

14a. DeBakey, M. E., and Simeone, F. A.: Battle Injuries of the Arteries in World War II: An Analysis of 2,471 Cases, Ann. Surg. **123**: 534-579 (April) 1946; abstracted, Bull. U. S. Army M. Dept. **5**: 295-300 (March) 1946.

15. Wolff, L. H., and Adkins, T. F.: Tourniquet Problems in War Injuries, M. Bull. Mediterranean Theat. Op. **3**: 23-25 (Jan.) 1945; Bull. U. S. Army M. Dept. (No. 87) pp. 77-84 (April) 1945.

V 14
1951

ted to the John Sealy Hospital in Galveston,[5] had fractures, 34 (26%) of which were compound fractures. It is to be expected, therefore, that large numbers of casualties will require treatment of simple and compound fractures after an atomic bomb explosion over a metropolitan area.

Fractures, whether simple or compound, must be splinted before the patient is moved. Narcotics are very seldom needed before a patient comes under medical supervision if a proper splint has been applied. Initial surgery for compound fractures should be done as early as possible: in installations near the collecting points in the case of the severely wounded, and in hospitals of the next echelon in the case of the lightly wounded. It is not necessary in this phase of management to go to extremes to effect accurate reduction, but careful débridement and immobilization are essential. When it is foreseen that a patient will be evacuated after a few days, the immobilization should be secured by means of plaster and not by traction. Plaster casts should be bivalved. The ventral half of the cast should be removed when the fracture is complicated by vascular injury. Accurate reduction can be secured at the time of reparative surgery.

It is important to bear in mind that clostridial myositis is associated with compound fractures even more commonly than with vascular injuries. Fracture patients must be kept under very close observation until the period during which such infections become apparent is past.

Wound Infection.—Adequate débridement and judicious use of antibiotics during initial treatment of casualties will minimize the incidence of wound infection. Infections which may occur will not become manifest until hours or days after the injury, when the bulk of the emergencies will have been treated and medical problems can be managed according to accepted principles without haste or confusion.

Tetanus Immunization: Clostridial infections warrant special mention because of their seriousness. The demonstration of the effectiveness of active immunization against tetanus by means of toxoid forms a brilliant chapter in the history of World War II and again in the present conflict in Korea. Unfortunately, immunization with tetanus toxoid is not universal among the civilian population. It will be impossible in the event of a major civilian catastrophe to determine the immunization status of the severely wounded. Consequently, it will be safest to treat all patients who incurred open wounds or severe contusions with prophylactic tetanus antitoxin (after the usual precautions regarding sensitivity) together with tetanus toxoid. The latter will serve as a booster dose in case the individual had been immunized with toxoid or as the initial dose for active immunization for those not previously immunized.

Prevention of Gas Gangrene: Clostridial myositis (gas gangrene) can be expected in any situation where mass casualties occur, for under such conditions débridement is likely to be delayed or inadequate. This infection can be fully developed as early as five hours after wounding, and the mortality is high. Early and thorough débridement is the best phophylaxis. The disease is not prevented by the use of antibiotics if the principles of wound management are violated. It has not been prevented by the prophylactic use of antitoxin. The disease has occurred in Korea despite adequate supplies of antibiotics, and Cutler and his associates [16] observed it among Air Force casualties treated prophylactically with penicillin. During World War II, the employment of sound surgical principles decreased the incidence of clostridial myositis from 65 early in the war to 1 per 10,000 casualties near the end of the war.

Patients who have incurred severe wounds should be kept under observation at the installation where initial surgery is done until the risk of life-endangering infection is over. In the case of clostridial myositis, most patients will have developed the disease within five or six days, if they are going to develop it at all. Plans should be made, therefore, to hold the severely wounded for about a week after initial surgery is done.

SUMMARY

The purpose of this report has been to emphasize two facts regarding mechanical injuries resulting from the explosion of an atomic bomb. First, the wounds are no different from those incurred in warfare or in civilian accidents, except that many will be complicated by burns and some by the effects of ionizing radiation. The principles of treatment are the same as those which crystallized during World War II and which are being demonstrated as sound in the present conflict in Korea. Second, the injuries occur in overwhelming numbers together with widespread destruction of facilities for medical care. Chaos can be avoided only if the casualties are managed according to a master plan which has stood the test of time. A chain of evacuation from the disaster area, as described in the first articles of this series, must be developed by industrial communities. Plans will vary from one community to the next, but all should aim at a design which will permit an orderly triage and evacuation of casualties from the target area to intact installations within the community and its suburbs. Those concerned with civilian defense must recognize that planning cannot be delayed. Time is required for plans to mature. There is no time for planning when a target area has been struck.

3395 Scranton Rd.

16. Cutler, E. C., and Sandusky, W. R.: Treatment of Clostridial Infections with Penicillin, Brit. J. Surg. (Supp.) 32: 168-176 (July) 1944. Cutler, E. C.; Morton, P. C., and Sandusky, W. R.: Observations on the Prophylactic Use of Penicillin in the Wounds of Aerial Warfare, ibid. (Supp.) 32: 207-211 (July) 1944.

Essentials of Anesthesia.—I am convinced that the majority of anesthetic deaths can be prevented, especially when one is dealing with patients who are relatively "good risks." . . . Three simple rules should be strictly adhered to except under conditions of dire emergency in an outlying country district. These are (1) a means of rhythmically inflating the patient's lungs with oxygen to be available; (2) a laryngoscope to be at hand and in full working order should it be necessary to inspect the air passages and if needs be to insert an endotracheal tube; (3) suction apparatus in full working order to be at hand to suck out the patient's mouth and other air passages should vomiting occur or should there be threatened aspiration of any other foreign material such as blood.—Norman R. James, M.D., The Teaching of Anesthesia, Especially in Relation to Safety and Resuscitation, *Medical Journal of Australia*, July 14, 1951.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

Narcotic drugs are often employed more or less routinely for preanesthetic medication without a full appreciation of their relative value for this purpose. The Council has authorized publication of the following report with the view of encouraging additional well-controlled and critical studies in this and related fields.

R. T. STORMONT, M.D., *Secretary.*

NARCOTICS IN PREANESTHETIC MEDICATION

A CONTROLLED STUDY

Ellis N. Cohen, M.D.
and
Henry K. Beecher, M.D., Boston

The use of a narcotic to support patients about to undergo anesthesia and surgery has a very long history; nonetheless, there are adequate reasons for examining the practice objectively. Such an examination begins logically with questions as to the purposes of the practice, its undesirable effects, and whether or not there are better ways to attain the desired results.

The beginning of this use of a narcotic was probably in 1850, when Lorenzo Bruno of Turin first mentioned the use of morphine as a hypnotic agent prior to the induction of anesthesia.[1] He used "the injection of morphine an hour before surgery . . . to lessen psychic trauma." In 1869 Claude Bernard, working in Bruno's clinic, described how the injection into animals of small amounts of morphine one hour before the administration of chloroform reduced by half the quantity of chloroform necessary for deep anesthesia.[2] Since that time many others have described the advantages of morphine in preanesthetic medication. Some believed that use of this drug contributed significantly toward reducing the quantity of anesthetic agent required to attain a given plane of cyclopropane or of ether anesthesia.[3] However, other workers have reported that morphine used preanesthetically contributed little, or not at all, to a reduction of the amount of ether required for a given plane of anesthesia.[4] Since, in this country alone, millions of doses of narcotics are administered for preanesthetic medication each year, it is important to determine whether or not the practice is valid.

From the Anesthesia Laboratory of the Harvard Medical School at the Massachusetts General Hospital, Boston.

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1. Dogliotti, A. M.: Anesthesia, translated by C. S. Scuderi, Chicago, S. B. Debour Co., 1939, p. 20.

2. Bernard, C.: Des effects physiologiques de la morphine et de leur combinaison avec ceux du chloroforme, Bull. gen de therap. medicale, chirurgicale, obstetricale, et pharmaceutique **77**: 241, 1869.

3. Robbins, B. H.; Baxter, J. H., Jr., and Fitzhugh, O. G.: The Effects of Morphine, Barbital, and Amytal upon the Concentration of Cyclopropane in the Blood Required for Anesthesia and Respiratory Arrest, J. Pharmacol. Exper. Therap. **65**: 136 (Feb.) 1939. Seevers, M. H.; Meek, W. J.; Rovenstine, E., and Stiles, J. A.: A Study of Cyclopropane Anesthesia with Especial Reference to Gas Concentrations, Respiratory, and Electrocardiographic Changes, J. Pharmacol. & Exper. Therap. **51**: 1 (May) 1934. Turpeinen, E.: Etude sur la teneur en ether du sang chez l'homme pendant l'anesthésie générale combinée avec la scopolamine-morphine, Acta chir. scandinav., Supp. 87, 1, 1944.

4. (*a*) Calderone, F. A.: Studies on Ether Dosage After Preanesthetic Medication with Narcotics (Barbiturates, Magnesium Sulfate, and Morphine), J. Pharmacol. & Exper. Therap. **55**: 24 (Sept.) 1935. (*b*) Potter, R.; Livingstone, H.; Andrews, E. and Light, G.: Blood Ether Levels in Surgical Anesthesia, Surgery **10**: 757 (Nov.) 1941.

5. Many papers have been written expressing aims of preanesthetic medication with which the authors do not agree. A recurrent theme is the use of narcotics to "lower the metabolic rate" so that "anesthesia will be easier." No evidence is given indicating that the doses used do in fact lower the metabolic rate, nor is any evidence produced indicating that this would be a sound procedure.

In recent times the recommended use of a narcotic in preanesthetic medication has been based, in several instances, upon careful observations. However, enthusiastic reports are generally derived from studies with animals having received very large doses of morphine in comparison with man. Moreover, with animals, the important subjective effects cannot be determined. When man is the experimental object, the favorable reports too often are based on few observations and frequently on clinical impression alone. Each new narcotic, often on the basis of little evidence, is accepted automatically as of value in preanesthetic medication. Hence, this is a legitimate field for inquiry on the part of the Council on Pharmacy and Chemistry.

The reasons offered for the use of a narcotic in preanesthetic medication fall into two principal categories.[5] First, it is desired to produce a desirable mental state in the patient, variously characterized as untroubled, serene, drowsy, and relaxed. There appear to have been no previous attempts to study these important subjective effects with and without morphine, or other agents administered in place of morphine. Second, there is the stated use of narcotics to reduce the quantity (blood-brain level) of anesthetic needed. These are legitimate aims. The first goal can be attained with narcotics. The purpose of this study was to ascertain if it could be accomplished as well, or better, with less hazardous agents. Concerning the second goal, no evidence has been found to prove conclusively that 15 mg. of morphine (¼ grain) reduces the blood levels of ether, or cyclopropane, or the quantity of thiopental sodium (pentothal sodium®) needed for surgery.

This paper presents evidence, then, which indicates that a narcotic is not essential in preanesthetic medication and that the attainable function of a narcotic in preanesthetic medication can be adequately performed by a barbiturate with fewer undesirable side-effects.

PROCEDURES

This work is based entirely on observations in man. Hospital patients were used as subjects, and they were divided into three equal groups to include approximately the same numbers of major and minor surgical procedures in comparable patients. The 558 subjects were drawn in rotation from the daily schedule of operations.

No attempt was made to select patients for the experiment except to eliminate the extremes of age and weight and to exclude patients with known contraindications to the drugs used. All anesthetics were administered by the anesthesia house staff which included both physicians and nurses in various degrees of training, all under close supervision, and without knowledge of what the premedication solution contained.

Three premedication solutions were prepared so that each 2 cc. volume contained: (1) 15 mg. of morphine sulfate and 0.6 mg. of atropine sulfate, or (2) 90 mg. of pentobarbital sodium and 0.6 mg. of atropine sulfate, or (3) 0.6 mg. of atropine sulfate. A standard vehicle containing 8% ethyl alcohol, 70% propylene glycol, and water sufficient to make 100 cc. was used for premedication solutions, which were administered subcutaneously on the basis of 2 cc. of solution per 70 kilograms of body weight. *The contents of all solutions were unknown to the patient, floor nurse, anesthetist, and examiner.* Code numbers on solutions were changed on all wards at the end of each month.

A preanesthetic interview was carried out in the operating room during which the patient was asked a series of direct, neutrally phrased questions in an attempt to evaluate subjectively his preanesthetic mental status while under the influence of the premedicating solution. These questions were prepared with the assistance of Dr. Jerome Bruner of the Department of Social Relations of Harvard University: (1) Are you comfortable? (2) Are you worried? (3) Are you tense? (4) Are you unusually happy? (5) Are you unusually sleepy? (6) Is your stomach upset? (7) Did you vomit?

The anesthetist recorded on a check list his own impressions as to the patient's mental state; i. e., whether he was comfortable, worried, excited, happy, depressed, talkative, or nauseated (See the tables). As the anesthesia proceeded, the anesthetist recorded the character of the induction and also his opinion as to whether or not a narcotic had been used in the premedicating solution. (The use of eye signs in judging the presence or absence of mor-

V 14
1951

phine was prohibited.) Approximately one hour after the induction of anesthesia, venous blood samples from the antecubital veins were drawn under mercury into heparinized syringes and analyzed for cyclopropane [6] or ether [7] content. In addition to the fact that the premedication would still be effective, evidence in support of this time of drawing the venous blood samples is contained in Table 12, in which it is shown that in 12 cases approximate equilibration of the inhalation anesthetic agents had occurred by that time (judging by the similarity of anesthetic levels in arterial and venous blood). When thiopental sodium was the sole anesthetic agent, the number of milligrams used per minute was averaged and recorded. On the first postoperative day, the patient was interviewed again and asked the same questions as in the preanesthetic period. In addition, the patient was asked to recall the details of his anesthetic experience and to express an opinion as to the pleasantness or unpleasantness of his induction.

RESULTS

Cases Studied.—The 558 cases studied were divided as follows: Nitrous oxide and ether, 353; cyclopropane, 100; thiopental sodium (pentothal sodium®) alone and with nitrous oxide, 105.

Time Interval Between Premedication and Induction of Anesthesia.—The average time from the subcutaneous injection of the premedicating solution until the start of induction of anesthesia was 61 minutes. As shown in Figure 1, the majority of patients fell within the 40 to 80 minute period, which implies

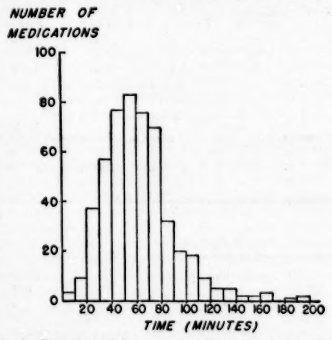


Fig. 1.—Time interval between premedication and start of induction of anesthesia.

that their premedication was already effective [8] at the time induction was started. The average time from the induction of anesthesia until the blood was drawn for gas analysis was 58 minutes, or an average of 119 minutes after the premedication solution had been given to the patient. Thus, the premedication drugs were still effective when the blood samples were drawn.

Induction of Anesthesia.—The anesthetists were asked to characterize the nature of the induction. The results shown in Table 1 were obtained. From the anesthetist's point of view, the average induction of anesthesia was not influenced by the addition of either morphine or pentobarbital to the premedicating solution.

Time Required for Insertion of Endotracheal Tube.—An endotracheal tube was inserted as soon as relaxation of the jaw was sufficient. This provided a point at which to mark the onset of muscular relaxation and the completion of the induction period. The average time required for insertion of the endotracheal tube in 230 cases is shown in Table 2.

These figures show that the addition of morphine or pentobarbital to the premedicating solutions does not expedite the induction of anesthesia, as indicated by the attainment of a sufficient degree of muscular relaxation for the insertion of an endotracheal tube.

Anesthetist's Opinion of the Premedicating Solution Used.—The anesthetists were asked to evaluate the over-all adequacy of the premedication used and to express an opinion as to whether or not they thought a narcotic had been present in a given case. This last opinion was expressed independently of the characteristic eye signs of morphine medication. The errors of the guesses shown in Table 3 are such as to indicate that the anesthetists followed the instructions.

The data of Table 3 also suggest that the anesthetists were satisfied almost equally with all premedication solutions used, including atropine alone. In addition, 47% of the time the

TABLE 1.—*Anesthetists' Characterization of Induction With Respect to Premedication Agents*

Premedication Agents	Smooth, %	Smooth, Slow, %	Difficult, %	Stormy, %
Morphine + atropine (184 cases)....	69	11	14	6
Pentobarbital + atropine (182 cases)	67	17	11	5
Atropine alone (192 cases).....	64	15	18	3

TABLE 2.—*Time Required to Insert an Endotracheal Tube*

Premedication Agents	Time, Min.
Morphine + atropine (72 cases).....	18.3
Pentobarbital + atropine (73 cases).....	18.2
Atropine alone (85 cases).....	17.5

anesthetists were unaware of the presence of morphine when it had been used in the premedicating solution. There was an equal tendency to confuse the presence of pentobarbital with that of morphine. Moreover, the anesthetists mistakenly thought 34% of the atropine control group had been premedicated with morphine.

Patient's Preanesthetic Physical and Mental Status.—After receiving a premedication solution, the patient was evaluated in his preanesthetic stage according to the following three categories. First, objective physical findings were recorded from examination of the patient: respiratory rate, pulse rate, and blood pressure. Second, a series of simple direct questions was asked the patient (see above and Table 5) to which he responded "yes" or "no." Third, the anesthetist recorded his impressions as to

TABLE 3.—*Anesthetists' Estimates as to Adequacy of the Premedication and Whether It Included a Narcotic*

Premedication Agents	Adequate %	Inadequate %	Excessive %	Narcotic Probably Used %
Morphine + atropine (184 cases).....	72	27	1	53
Pentobarbital + atropine (182 cases)	72	26	2	46
Atropine alone (192 cases).....	66	33	1	34

TABLE 4.—*Preanesthetic Physical Data*

Premedication Agents	Respiratory Rate	Pulse Rate	Blood Pressure
Morphine + atropine (184 cases).....	19.0	84	125/74
Pentobarbital + atropine (182 cases)....	19.0	84	126/74
Atropine alone (192 cases).....	19.6	85	127/83

any apprehension, excitement, or euphoria manifested by the patient during his preparation for induction, regardless of his response to direct questioning (Table 5).

The physical signs were recorded by the anesthetist before anesthesia was started (Table 4).

It appeared that the patient himself thought that morphine was slightly more effective (6%), in comparison with atropine alone, for reducing the amount of preoperative excitement and also for producing a sleepy state preanesthetically. In fact, a chi square analysis shows significance at the 0.05 level. Likewise,

6. Orcutt, F. S., and Waters, R. M.: Method for Determination of Cyclopropane, Ethylene, and Nitrous Oxide in Blood with Van Slyke-Neill Manometric Apparatus, J. Biol. Chem. **117**: 509 (Feb.) 1937.

7. Andrews, E.; Potter, R. M.; Friedemann, T. E., and Livingstone, H. M.: Determination of Ethyl Ether in Blood, J. Lab. & Clin. Med. **25**: 966 (June) 1940.

8. Subcommittee on Anesthesia, National Research Council: Fundamentals of Anesthesia, Chicago, A. M. A. Press, 1944, p. 34.

there seemed to be a little less excitement under morphine than under the barbiturate, judging by the patients' statements; but this was not evident to the anesthetist (See last half of Table 5).

Patient's Postanesthetic Recall.—On his first postoperative day, the patient was asked the same series of questions that had been asked immediately before the induction of anesthesia. In addition, a check list was used to record details of both spontaneous and suggested recall of the patient's anesthetic experience from the time the premedicating solution was injected until the actual induction of anesthesia. The results of questioning postoperative patients are shown in Table 6.

There appears to be little difference in the power of the premedicating solutions used to prepare the patient for his anesthetic experience, judging by his recall. It can be observed from the data of Table 6 that postanesthetic patients were somewhat slower to recall the discomfort experienced during their preanesthetic phase than before induction; however, no significant differences are shown between the morphine, pentobarbital, or control group.

There also appears to be no differentiation in the patient's ability to recall details (both spontaneous and suggested) of his preanesthetic experience while under the influence of the three premedicating solutions. The patients were asked: "What do you remember happening to you in the hour or so just before your operation?" They were questioned regarding the hypodermic injection, the trip to the operating room, the placement of the mask or the needle for injection, and the movement from bed to the operating table. A score of 4 equals a 100% recall of the detail check list. Patients given morphine plus atropine got a score of 3.1, those given pentobarbital plus atropine, a score of 2.9, and those given atropine alone, a score of 3.2.

The patients were also questioned on their first postoperative day as to the pleasantness or unpleasantness of the anesthetic induction. Their reactions are summarized in Table 7. Apparently, the patients were equally satisfied with all premedicating solutions used.

Blood Anesthetic Levels.—Venous blood levels for ether were determined [7] in 101 patients and venous cyclopropane levels determined [6] in 76 patients. These blood samples were drawn approximately one hour (mean time=58 minutes) after the induction of anesthesia. No attempt was made to draw them during a particularly defined plane of anesthesia, except to be certain that all patients were in a surgical level of anesthesia. Thiopental sodium in terms of milligrams of drug used per minute of anesthesia was calculated in 52 of the 54 [9] cases in which this drug was the sole anesthetic agent. The results are shown in Table 8.

From these data, there does not appear to be a significant reduction in the blood levels of either cyclopropane or ether required for surgery when the various premedicating solutions are used. A "t" test for both cyclopropane and ether levels does not show a significant variation with the three premedicating solutions used. These results are in accord with the findings of Calderone [4a] and of Potter and co-workers,[4b] and in disagreement with other reported work in animals and in man.[3] Although there was an apparent reduction in the amount of thiopental sodium required per minute when morphine was used for premedication, as compared to the control solution of atropine alone, this difference is not significant on a statistical level ($p = <0.5$ and >0.4). If a difference cannot be shown in data based upon 52 patients, any one person's clinical acumen would not be great enough to detect it in a given case.

The venous blood levels obtained for the ether cases varied from 57 to 160 mg. per 100 cc. These values are within normal reported ranges for the various planes of surgical anesthesia. Interestingly enough, the distribution of anesthetic levels (Fig. 2), is almost in complete agreement with the results reported by Potter and co-workers [4b] in which "all blood samples were drawn at the second plane of the third stage after careful selection by . . . one of three experienced anesthetists." Judging by the wide scatter of blood levels when Potter and co-workers thought that they were taking their blood samples at a constant level of anesthesia, it is very difficult to define planes of anesthesia by clinical judgment alone. (It is assumed that the venous blood reflects the concentration in the brain.) Accordingly, all samples were taken one hour after induction without using any further

TABLE 5.—*Preanesthetic State: Patients' Answers to Direct Questions*

Premedication Agents	Discomfort, %	Apprehension, %	Excitement, %	Euphoria, %	Sleepiness, %	Nausea, %
Morphine + atropine	5	32	27	7	17	3
Pentobarbital + atropine	4	35	34	7	15	4
Atropine alone	5	36	33	6	10	6

Anesthetists' Impressions as to Patients' State

Premedication Agents	Discomfort, %	Apprehension, %	Excitement, %	Euphoria, %	Depression (Sleepiness), %	Nausea, %	Talkativeness, %
Morphine + atropine	9	57	16	5	10	1	22
Pentobarbital + atropine	5	55	16	4	10	1	24
Atropine alone	10	62	21	3	8	2	20

TABLE 6.—*Patients' Estimates of Their Preoperative State on the First Postoperative Day*

Premedication Agents	Discomfort, %	Apprehension, %	Excitement, %	Euphoria, %	Sleepiness, %	Nausea, %	Talkativeness, %
Morphine + atropine	3	30	42	24	46	8	26
Pentobarbital + atropine	2	31	31	24	46	10	21
Atropine alone	3	34	41	20	40	9	16

TABLE 7.—*Postoperative Memory of the Induction with Respect to Premedication Agents*

	Pleasant Induction, %	Unpleasant Induction, %	Indifferent Induction, %
Morphine + atropine	73	5	22
Pentobarbital + atropine	70	3	27
Atropine alone	73	7	20

TABLE 8.—*Blood Levels of Anesthetic Agents One Hour After Induction of Anesthesia*

Premedication	Cyclopropane, Mg./100 Cc. (76 Cases)	Ether, Mg./100 Cc. (101 Cases)	Thiopental Sodium, Mg. Used/Min. (52 Cases)
Morphine + atropine	13.2 (25 cases)	103.1 (37 cases)	30.6 (17 cases)
Pentobarbital + atropine	13.9 (27 cases)	100.8 (28 cases)	34.7 (19 cases)
Atropine alone	13.6 (24 cases)	95.9 (36 cases)	34.3 (16 cases)

9. In two patients some thiopental sodium was lost through a leaky connection; therefore, these cases were not included in the average.

V 14
1951

criteria of depth of anesthesia. The types of cases were balanced in the three groups studied.

Figure 3 shows the range of values obtained from the venous cyclopropane blood samples. They vary from 7 to 23 mg. per 100 cc. Again, these are in accord with other reported figures for surgical levels of cyclopropane anesthesia.[3a, b]

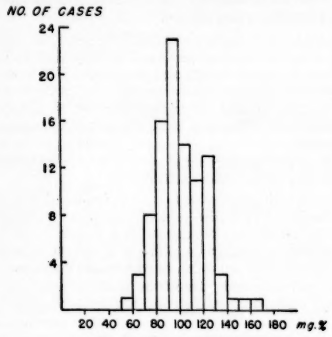


Fig. 2.—Venous blood ether levels.

Breakdown of Results by Anesthetic Agents.—A breakdown of the several categories of premedicating drugs was also made (Table 9) in terms of the individual anesthetic agents used (Cf. Table 1). The anesthetists expressed their opinion of the adequacy of the premedicating solutions as shown in Table 10 (Cf. Table 3).

When questioned on their first postoperative day, the patients expressed opinions as to their anesthetic inductions as shown in Table 11 (Cf. Table 7). The results of this tabulation reveal that, when utilizing a given anesthetic agent, there is little difference in response to the various drugs used for premedication. The patient's response to the various anesthetic agents, however, did vary (Table 11). For example, while an average of 64% of the patients were pleased with a gas-oxygen-ether induction, 70% were pleased with cyclopropane, and 92% were pleased when induction was made with thiopental sodium. This is in accord with clinical impression.

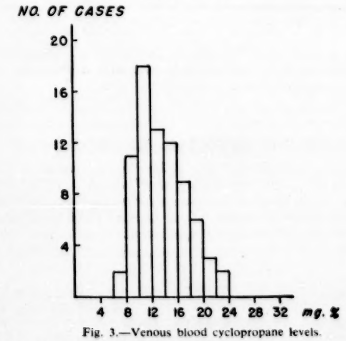


Fig. 3.—Venous blood cyclopropane levels.

Effects of the Premedicating Drugs on Oxygen Saturation and Carbon Dioxide Tension.—Twelve cases were selected at random in the cyclopropane and ether group and studied to evaluate any effects of the premedicating solutions on arterial oxygen saturation[10] or carbon dioxide tension.[11] Any depression of respiration would be shown by an elevated tension of carbon dioxide. In addition, simultaneous venous and arterial blood samples were drawn approximately 60 minutes after the induction of anesthesia in order to study the distribution of the anesthetic agent between the venous and arterial circulation. An attempt was made to maintain the plane of anesthesia as steady as possible while the blood was being drawn (Table 12).

Both oxygen saturation and tension of carbon dioxide were within normal ranges for the cases studied. Normality of the blood gases was so well preserved in the 12 patients, it seemed needless to carry this part of the work further. It was also apparent that, at the end of one hour's anesthesia, approximate equilibrium was established for the anesthetic gases between arterial and venous blood. Thus, the venous samples drawn one hour after induction should give a satisfactory indication as to the patient's plane of surgical anesthesia when averaged for rather large numbers.

TABLE 9.—*Anesthetists' Characterization of Induction**

Premedication and Anesthetic	Smooth Induction, %	Smooth, but Slow Induction, %	Difficult Induction, %	Stormy Induction, %
Morphine + atropine				
Ether and nitrous oxide.....	57	13	21	9
Cyclopropane	86	8	3	3
Thiopental	93	7	0	0
Pentobarbital + atropine				
Ether and nitrous oxide.....	57	23	14	6
Cyclopropane	91	0	6	3
Thiopental	79	15	6	0
Atropine alone				
Ether and nitrous oxide.....	55	19	22	4
Cyclopropane	71	10	16	3
Thiopental	89	5	3	3

* With respect to anesthetic agents (cf. Table 1).

TABLE 10.—*Anesthetists' Estimates as to Adequacy of the Premedication and Whether a Narcotic Was Used**

Premedication and Anesthetic	Adequate, %	Inadequate, %	Excessive, %	Narcotic Probably Used, %
Morphine + atropine				
Ether and nitrous oxide.....	63	37	0	53
Cyclopropane	88	9	3	57
Thiopental	90	10	0	52
Pentobarbital + atropine				
Ether and nitrous oxide.....	66	32	2	47
Cyclopropane	88	12	0	44
Thiopental	82	18	0	49
Atropine alone				
Ether and nitrous oxide.....	59	41	0	38
Cyclopropane	74	23	3	19
Thiopental	82	16	2	34

* With respect to anesthetic agents (cf. Table 3).

TABLE 11.—*Postoperative Memory of the Induction**

Premedication and Anesthetic	Pleasant Induction, %	Unpleasant Induction, %	Indifferent Induction, %
Morphine + atropine			
Ether and nitrous oxide.....	64	8	28
Cyclopropane	76	3	21
Thiopental	93	0	7
Pentobarbital + atropine			
Ether and nitrous oxide.....	63	5	32
Cyclopropane	57	0	43
Thiopental	93	0	7
Atropine alone			
Ether and nitrous oxide	66	9	25
Cyclopropane	77	7	16
Thiopental	89	3	8

* With respect to anesthetic agents (cf. Table 7).

10. Van Slyke, D. D., and Neill, J. M.: Determination of Gases in Blood and Other Solutions by Vacuum Extraction and Manometric Measurements, J. Biol. Chem. **61**: 523 (Sept.) 1924. Austin, J. H.: Estimation of Carbon Dioxide in Serum in Presence of Ether by Van Slyke Method, J. Biol. Chem. **61**: 345 (Sept.) 1924.

11. Hastings, A. B., and Sendroy, J., Jr.: Studies of Acidosis: Colorimetric Determination of Blood pH at Body Temperature Without Buffer Standards, J. Biol. Chem. **61**: 695 (Oct.) 1924.

COMMENT

As shown in Table 3, the anesthetists evaluated the preanesthetic medication as adequate more often when morphine or pentobarbital was used than when atropine alone was used; but there was no difference between morphine and pentobarbital for the purpose.

In Table 5, first part, although no important difference among any of the three preanesthetic solutions emerges, there was possibly a little less excitement when morphine was used. This difference is at the 5% level of significance. In the last part of Table 5, it is evident that the anesthetists could not detect any difference in excitement between the instances in which morphine and pentobarbital were used. In this same section of Table 5, one can find evidence which indicates that the patients impressed the anesthetists as being somewhat more apprehensive when atropine alone was used than when the other two agents were employed; but here again there was no difference between morphine and pentobarbital.

Table 9 contains evidence showing that the induction of inhalation anesthesia was a little smoother when morphine or pentobarbital sodium was used than when atropine alone was employed in the premedication. The evidence is only suggestive for ether; it is stronger for cyclopropane. Difficult induction was more common under cyclopropane unless morphine or pentobarbital sodium was used. There was no appreciable difference here between morphine and pentobarbital sodium.

TABLE 12.—*Blood Gases Under Ether and Under Cyclopropane**

	Case No.	Arterial Cyclo., Mg./100 Cc.	Venous Cyclo., Mg./100 Cc.	Oxygen Content, Vol. %	Oxygen Capacity, Vol. %	Oxygen, % Sat.	pH	Carbon Dioxide Content, mEq./L.	Carbon Dioxide Tension, Mm. Hg
Morphine + atropine	1	12.1	11.4	17.0	17.4	98	7.36	22.3	47.5
	2	10.9	10.7	20.2	20.0	100	....	....	....
Pentobarbital + atropine	3	11.6	8.5	16.1	15.4	100	7.35	22.4	47.0
	4	16.7	14.9	18.9	18.6	100	....	....	....
Atropine alone	5	17.7	17.4	17.8	16.4	100	7.45	25.2	37.2
	6	12.2	10.8	16.1	15.6	100	....	....	....
	Case No.	Arterial Ether, Mg./100 Cc.	Venous Ether, Mg./100 Cc.	Oxygen Content, Vol. %	Oxygen Capacity, Vol. %	Oxygen, % Sat.	pH	Carbon Dioxide Content, mEq./L.	Carbon Dioxide Tension, Mm. Hg
Morphine + atropine	7	84.0	78.0	17.2	17.0	100	7.44	25.5	38.5
	8	66.0	53.0	18.1	16.5	100	....	....	....
Pentobarbital + atropine	9	139.0	130.0	22.2	19.9	100	7.43	26.4	40.5
	10	85.0	77.0	19.5	18.6	100	....	....	....
Atropine alone	11	80.0	85.0	16.7	16.9	99	7.40	24.4	40.5
	12	83.0	79.5	16.6	17.0	98	....	....	....

* With respect to the premedication agents.

From the present study it is evident that pentobarbital sodium is an effective and satisfactory substitute for morphine in preanesthetic medication. Both morphine and pentobarbital contributed only a little to the improvement of the patient's preanesthetic mental state (insofar as it could be measured) and the induction of anesthesia. Both agents produce euphoria. This is a desirable result but one difficult to measure exactly. In other work in progress in the Anesthesia Laboratory of the Harvard Medical School, impressive euphoria has been produced by parenteral injection (as in the studies reported here) of pentobarbital. Presumably, the euphoria produced by the same dose of this agent is greater when administered parenterally than when it is given by mouth. This may be explained by its more rapid absorption when injected. Neither morphine nor pentobarbital contributed to reducing the actual blood levels of the anesthetic agents required to maintain surgical anesthesia. This does not imply, however, that morphine is to be discarded entirely in preanesthetic medication. Rather, its use or that of other powerful narcotics should be restricted to providing analgesia. Patients in preoperative pain should receive an analgesic agent in preanesthetic medication, but few patients coming to surgery have pain severe enough to require a narcotic.

SUMMARY AND CONCLUSIONS

1. A controlled study of preanesthetic medication was made in 558 patients undergoing anesthesia with ether, cyclopropane, or thiopental sodium. The drugs used for premedication included morphine sulfate and atropine, pentobarbital sodium and atropine, and atropine alone. These agents were all administered as "unknowns" and their effects characterized without knowledge of which one had been given.

2. Preanesthetic interviews with the patient, after administration of the drugs, an appraisal by the anesthetist, and a postanesthetic interview indicate few differences in the effectiveness of the premedicating drugs studied.

3. Smoothness of induction of anesthesia, muscular relaxation as measured by the time for insertion of an endotracheal tube, depth of anesthesia as indicated by venous blood levels of cyclopropane and of ether, and observations of milligrams of thiopental sodium required per minute all show no important and few significant differences with the three premedicating solutions tested.

4. Blood oxygen saturation and carbon dioxide elimination were satisfactory in the cases studied.

5. On principle, it is desirable to reduce the use of narcotics whenever possible. As a further principle, morphine and similar agents should not be used because of their power to produce euphoria, except in conjunction with the treatment of severe pain or in patients who are dying, as with terminal cancer.

6. Unless pain is present, there is no need for a narcotic in preanesthetic medication. Its function can be adequately fulfilled by a small dose (90 mg.) of pentobarbital sodium. The latter agent has fewer hazards associated with it than have the commonly used narcotics.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Methimazole.—Tapazole (Lilly).—1-Methyl-2-mercaptoimidazole.—$C_4H_6N_2S$.—M.W. 114.17.—The structural formula for methimazole may be represented as follows:

Actions and Uses.—Methimazole is similar in indications and uses to propylthiouracil, but it is perhaps twenty times as potent. The side-effects are also similar to those of propylthiouracil,

and have included skin rashes, urticaria, joint pains, and agranulocytosis.

Dosage.—Initially, 5 to 10 mg. should be given three times a day. After the hyperthyroidism is controlled, which may require 30 to 60 days, a maintenance dose of 5 to 10 mg. daily may be expected to keep the disease under control. While protracted treatment may finally extinguish the disease, the preferred course at present is to perform a thyroidectomy as soon as the disease is controlled.

Tests and Standards.—

Physical Properties: Methimazole is a white to buff, crystalline powder which has almost no taste and a very faint odor. It melts between 145 and 148 C. One gram dissolves in about 4.5 ml. of water, in about 5.0 ml. of alcohol, in about 4.4 ml. of chloroform, and in about 125 ml. of ether. A 2% solution has a pH between 6.7 and 6.85.

Identity Tests: Dissolve about 50 mg. of methimazole in 5 ml. of water and slowly add an excess of iodine T.S. to the solution: at first the iodine color is removed and upon continued addition a brown precipitate forms that finally turns brownish black.

A 0.0003% solution of methimazole, prepared as directed in the spectrophotometric assay, exhibits an ultraviolet absorption maximum at about 2,520 Å [E(1%, 1 cm.), about 1,357] with a minimum at about 2,200 Å.

Purity Tests: Dry about 2 gm. of methimazole, accurately weighed, in a vacuum for 24 hours over phosphorus pentoxide: the loss in weight is not more than 0.5%.

Char about 0.5 gm. of methimazole, accurately weighed, over a low flame. Cool the charred mass, then add 1 ml. of sulfuric acid and continue ignition until no carbon remains: the amount of residue present is not more than 0.1%.

Assay: (Methimazole) Transfer about 30 mg. of methimazole, accurately weighed, to a 1,000 ml. volumetric flask, fill to the mark with water and mix thoroughly. Transfer exactly 10 ml. of the solution to a 100 ml. volumetric flask, fill to volume with water and again mix thoroughly. Determine the absorbancy of the final solution (0.0003%) at 2,520 Å with a spectrophotometer. The number of milligrams of methimazole present per milliliter of the final solution = absorbancy ÷ 135.7. The amount of methimazole present is not less than 96.5 nor more than 102.5%.

(Nitrogen) Transfer to a semi-micro Kjeldahl flask about 0.15 gm. of methimazole. Digest it for 4 hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate and 0.3 gm. of mercuric oxide. Cool the contents of the flask and carefully add 15 ml. of water. Make the solution alkaline with 40% sodium hydroxide and then add 10 ml. of 40% sodium thiosulfate. Distil the ammonia into 20 ml. of 4% boric acid. Using a mixed indicator (1:5 methyl red T.S. and bromocresol green T.S.), titrate the ammonia liberated with 0.1 *N* sulfuric acid. Each milliliter of 0.1 *N* acid is equivalent to 0.001401 gm. of nitrogen and 0.005708 gm. of methimazole. The amount of nitrogen present is not less than 24.0 nor more than 24.8% equivalent to not less than 98.0 nor more than 101.0% of methimazole.

Dosage Forms of Methimazole

TABLETS. *Identity Tests:* Powder enough tablets to give about 50 mg. of methimazole and add the powder to about 10 ml. of water. Mix thoroughly and filter the mixture. The filtrate responds to the identity tests listed in the monograph for Methimazole.

Assay: (Methimazole) Powder about 20 tablets and transfer to a 1,000 ml. volumetric flask an amount, accurately weighed, equivalent to 30 mg. of methimazole. Mix thoroughly and filter a portion of the solution, discarding the first 25 ml., and then transfer exactly 10 ml. of the subsequent filtrate to a 100 ml. volumetric flask. Fill to the mark with water and determine the absorbancy of this solution at 2,520 Å with a spectrophotometer. The number of milligrams of methimazole present per milliliter of the final solution = optical density at 2,520 Å ÷ 135.7. The amount of methimazole present is not less than 95.0 nor more than 105.0% of the labeled amount.

Tablets Tapazole: 5 mg. Eli Lilly & Company, Indianapolis.

Cod Liver Oil Concentrate (Liquid) (See New and Nonofficial Remedies 1951, p. 465).

Capsules Cod Liver Oil Concentrate with added Vitamin D_2: Each capsule has a potency of not less than 12,500 U.S.P. units of Vitamin A and of not less than 1,250 U.S.P. units of Vitamin D. White Laboratories, Inc., Kenilworth, N. J.

Liquid Cod Liver Oil Concentrate with added Vitamin D_2: 6 cc., 30 cc., and 60 cc. vials. Packaged with an accompanying dropper designed to supply in each two drops not less than 3,000 U.S.P. units of Vitamin A and not less than 600 U.S.P. units of Vitamin D. White Laboratories, Inc., Kenilworth, N. J.

Carbol-Fuchsin Paint (See New and Nonofficial Remedies 1951, p. 57).

Carbol-Fuchsin Paint: 30 cc., 60 cc., 120 cc., and 480 cc. bottles. A solution of 1% boric acid, 4.5% phenol, 10% resorcinol, 0.3% fuchsin, 5% acetone, and 10% alcohol in water, q. s. The Veltex Company, Birmingham, Ala.

Acet-Dia-Mer-Sulfonamides (See THE JOURNAL, Oct. 20, 1951, p. 759).

Tablets Incorposul: 0.5 gm. Each tablet contains 0.167 gm. each of sulfacetamide, sulfadiazine, and sulfamerazine. The Blue Line Chemical Company, St. Louis.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

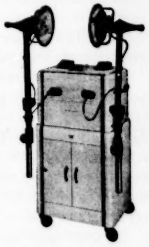
The Council on Physical Medicine and Rehabilitation has authorized publication of the following reports.

RALPH E. DE FOREST, M.D., *Secretary.*

LIEBEL-FLARSHEIM SHORT-WAVE DIATHERMY, MODEL SW-660, ACCEPTED

Manufacturer: The Liebel-Flarsheim Company, 303 W. Third St., Cincinnati 2.

The Liebel-Flarsheim Short-Wave Diathermy, Model SW-660, is an apparatus generating radio frequency energy at 27.12 megacycles for medical application. The housing of the generating equipment sits upon a cabinet which can be moved about on the floor on casters. Together, the two parts stand about 103 cm. in height (40¾ in.) and weigh 76 kg. (168 lb.). They are crated separately. The total shipping weight is 100 kg. (220 lb.). The shipping weight includes 2 air-spaced plates, 1 hinged drum, and 2 adjustable arms. For operation the apparatus requires a 60-cycle alternating current at 120 volts, and it draws 1,000 watts. (The Federal Communications Commission's Type Approval Number is D-539.)



Liebel-Flarsheim Short-Wave Diathermy, Model SW-660.

The manufacturer uses a novel method of frequency control—a coaxial line oscillator, popularly referred to as a "cavity." The power output is controlled by a single control-knob, greatly simplifying the operation of the apparatus. The unit is equipped with a synchronous motor-driven timer, which may be used or not used at the discretion of the operator.

In a laboratory acceptable to the Council, evidence was obtained that the apparatus performed as represented by the manufacturer. The unit has an output of 445 watts using air-spaced plates and 395 watts with the hinged drum. The Council on Physical Medicine and Rehabilitation voted to include the Liebel-Flarsheim Short-Wave Diathermy, Model SW-660, in its list of accepted devices.

ROCHESTER HEARING AID, MODEL R-1, ACCEPTED

Manufacturer: Rochester Acoustical Laboratories, Inc., 117 Fourth St., S. W., Rochester, Minn.

The Rochester Hearing Aid, Model R-1, is an electric instrument of conventional design. Without latch, knobs and clothing clip it measures 79 by 54 by 20 mm. The transmitter unit alone without batteries weighs 110.5 gm. With batteries it weighs 148 gm., and the receiver and cord add 11 gm.

Rochester Hearing Aid, Model R-1.

Evidence of satisfactory construction and performance was obtained from sources acceptable to the Council. The Council on Physical Medicine and Rehabilitation voted to include the Rochester Hearing Aid, Model R-1, in its list of accepted devices.

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TRANSPOSITION OF AORTA AND PULMONARY ARTERY

Transposition of the great vessels, according to Harris and Farber,[1] has attracted attention as the most interesting and puzzling of congenital cardiac malformations. Defects such as persistent foramen ovale, ductus arteriosus, and abnormal aortic arches may be considered as mere developmental defects, or as evidences of the persistence of certain stages in embryonic development. In transposition, however, a radical departure from normal development has apparently taken place.

Abbott [2] defines transposition as an alteration in the position of the two great vessels relative to the ventricles of the heart, or to each other at their origin, so that they spring either from reversed ventricles, the aorta from the right, and the pulmonary artery from the left chamber (complete transposition), or from the ventricle to which they normally belong, but in reversed relationship (corrected transposition).

Of the many attempts to explain this anomaly the phylogenetic theory of Spitzer appears to be the most acceptable. It is based on the fundamental postulate of the orderly development of the organ, as a unit, in response to various conditions, forces and demands in a series rising from fish to birds and mammals.

In complete transposition the aorta arises from the ventricle receiving systemic venous blood and the pulmonary artery arises from the ventricle receiving oxygenated blood. Blood that is pumped by the left ventricle through the pulmonary artery to the lungs returns by the pulmonary veins and left auricle to its point of origin in the left ventricle. Blood that is propelled by the right ventricle through the aorta to the body is returned by the systemic veins and the right auricle to its starting point in the right ventricle. Thus, Blalock and Hanlon [3] point out, the systemic and pulmonary circulations are basically separate. A condition of this type is not compatible with life. However, there is generally some degree of communication between the two circulations by way of septal defects or other abnormalities. These abnormal communications allow some oxygenated blood to be shunted into systemic circulation, and some venous blood is similarly transferred to the pulmonary circulation. In the 123 cases collected by Hanlon and Blalock,[4] duration of life was 19 months. However, six of these patients lived 10 years or longer; if these are excluded, the average duration of life for 117 patients is only five and one-half months. These authors stress that in complete transposition an interventricular septal defect is the single compensating abnormality associated with the longest life expectancy. A patent interatrial septum is the next most favorable isolated defect, and the combination of these two gives the best prognosis of all.

Taussig [5] made clinical recognition of transposition of the great vessels possible by her description of clinical features. The fluoroscopic signs are very important. They show a narrow aortic shadow in the anterior-posterior position and a wide aortic shadow in the left anterior-oblique position, combined with enlargement of both ventricles and the absence of fulness of the normal pulmonary conus of the right ventricle. The condition leads to progressive cardiac enlargement and death during infancy. Occasionally a balance is established; it may then be compatible with life for a number of years. These children are greatly incapacitated and frequently squat when tired. They suffer from severe anoxia, and early and severe polycythemia and clubbing develop. A systolic murmur and gallop rhythm are common. There is slight cardiac enlargement and absence of fulness of the pulmonary conus. The physical markings extend nearly to the periphery of the lung fields; there are many discrete circulation shadows in the hilar region. Campbell and Suzman [6] emphasize a loud and booming pulmonary second sound as the most important physical sign. They consider as suggestive the following features in the lung fields: (1) the general mottling and increased density, (2) dilatation of the pulmonary arteries and of their main branches, and (3) expansile pulsation. The prognosis, according to them, is generally bad, the patients dying in the first few months. If, however, the septal defects are large enough for adequate mixing of the circulation of both sides of the heart, so that the child survives infancy, there is no reason why it should not survive much longer. They report on 25 children selected among 400 children with cyanotic congenital heart disease, as having a transposition of the great vessels. The selection was made on the appearance of the lung fields on radioscopy and teleradiography and expansile pulsation of the pulmonary branches. Six of the children had cardiac catheterization and five of the six and two others had angiocardiography.

Blalock and Hanlon [3] attempted correction of this anomaly in 33 patients, all of them with preoperative diagnosis by Helen Taussig. Three types of operation were attempted: (1) some type of extracardiac venous or arterial shunt, (2) creation of an auricular septal defect, and (3) combination of these two methods. The combined procedure offered the greatest likelihood of improvement. In the first 28 patients operated on, there

1. Harris, J. S., and Farber, S.: Transposition of the Great Cardiac Vessels: With Special Reference to the Phylogenetic Theory of Spitzer, Arch. Path. **28**: 427 (Oct.) 1939.
2. Abbott, M. E., in Osler, W.: Modern Medicine, edited by T. McCrae, Philadelphia, Lea & Febiger, 1927
3. Blalock, A., and Hanlon, C. R.: Surgical Treatment of Complete Transposition of the Aorta and the Pulmonary Artery, Surg., Gynec., & Obst. **90**: 1 (Jan.) 1950.
4. Hanlon, C. R., and Blalock, A.: Complete Transposition of the Aorta and the Pulmonary Artery: Experimental Observations on Venous Shunts as Corrective Procedures, Ann. Surg. **127**: 385-397 (March) 1948.
5. Taussig, H. B., Congenital Malformations of the Heart, New York, The Commonwealth Fund, 1947, in Blalock and Hanlon.[3]
6. Campbell, M. and Suzman, S.: Transposition of the Aorta and Pulmonary Artery, Circulation **4**: 329 (Sept.) 1951.

V 14
1951

were 22 deaths. This exceedingly high mortality, the authors feel, was attributable to the precarious condition of the patients, to the use of procedures now considered unsound, or to technical errors. In 12 patients treated by the creation of an auricular septal defect and an anastomosis between the right subclavian and pulmonary arteries, eight are living with various degrees of improvement. A true anatomic correction of the defects has not been feasible so far.

GENERAL PRACTITIONER'S AWARD

In recognition of nearly 50 years of exceptional service to his patients and to medicine, Dr. A. C. Yoder, of Goshen, Ind., was awarded the fifth annual general practitioner's gold medal and named "general practitioner of the year" by the House of Delegates of the American Medical Association at the Los Angeles clinical session. The winner of this award is selected each year from a list of three names submitted to the House of Delegates by the Board of Trustees, who in turn receive nominations from each of the state and territorial medical societies. Others who figured in this year's final voting were Dr. Everett Beam Lattimore, of Shelby, N. C., and Dr. Clayton Willison, of Sault Ste. Marie, Mich.

ALBERT C. YODER, M.D.

Dr. Yoder was born in La Grange County, Ind., in 1867. Starting his career as a schoolteacher, he served as high school principal for six years before attending medical school. After receiving a medical degree from Rush Medical College, Chicago, in 1902 he located in Goshen and has practiced there since that time. Answering calls first by bicycle, next by horse and buggy, and finally by car, Dr. Yoder has always given his best efforts to his patients. In the midst of a busy practice he has found time to participate in many civic programs. He was city health officer of Goshen for eight years. He has been active in his county medical society, serving as president on two occasions and as delegate to the Indiana State Medical Association for 35 years. Today, at an age when most men would have retired, Dr. Yoder sees patients in his office six days a week and maintains an active interest in current scientific advances in medicine. When told he had been selected as Indiana's nominee for the national honor, he said that he looked forward to many more years of service to the people of Goshen. Dr. Yoder was flown from his home to Los Angeles for the presentation of the gold medal award before the House of Delegates on December 6.

TUMORS IN FOOD-PRODUCING ANIMALS

While the common laboratory animals have been widely used in experimental cancer research, little attention has been paid to the research opportunities offered by the tumors of the larger food-bearing animals. Information concerning the prevalence and types of tumors present in these animals and the contributions that study of these tumors might make to an understanding of the etiology of cancer has recently been presented by Dr. Paul E. Steiner, pathologist at the University of Chicago, and Dr. John S. Bengston, veterinarian with the pathological division of the Bureau of Animal Industry.[1] On the basis of figures obtained from the meat inspection division of the Bureau of Animal Industry, together with an allowance for animals slaughtered by nonfederal inspected butchers and packers, these authors estimate that during 1949 some 152,856 food-producing animals marketed in the United States had tumors. They emphasized that this figure probably represents only about half the national total, since it does not include slaughtered animals with tumors localized in the viscera and hides, animals cured by veterinarians, or animals dying of tumors on farms and ranches. It is interesting to note that in cattle undergoing federal meat inspection, tumors now exceed tuberculosis as a cause for condemnation.

The economic loss due to tumors in meat-producing animals during 1949 was calculated by Steiner and Bengston to approximate 3 million dollars, which is conceded to be a gross underestimate, since it fails to take into account losses on farms and ranches, and other factors, such as the adverse affect of tumors on body weight and the loss from lower grading of meat in animals with localized tumors. Furthermore, it does not include the large loss due to tumors in poultry.

In addition to this great economic loss, there is also a tremendous scientific loss, since these tumors end as tankage and other by-products. As the authors point out, research on tumors in food-bearing animals could contribute to the solution of cancer problems in man as well as in animals. Large animals with large spontaneous tumors offer many advantages; for example, one leukemic cow, in which one lymph node may weigh 20 lb., would provide more research material than thousands of leukemic mice for chemical, viral, nutritional, and other types of studies. Again, certain animal tumors might throw additional light on the relative importance of

1. Steiner, P. E., and Bengston, J. S.: Research and Economic Aspects of Tumors in Food-Producing Animals, Cancer 4: 1113, 1951.

heredity and environment. Thus carcinoma of the eye is found chiefly in white-face Hereford cattle originating in the southern and southwestern parts of the country. It is not known, however, whether some strains are genetically predisposed to this type of neoplasm or whether the geographical distribution is explained purely by environmental factors. In these and other genetic studies breeding records would be of great value. A challenging finding, too, is the relative absence in food-producing animals of common tumors of man, such as carcinoma of the stomach, colon, mammary gland, prostate, pancreas, esophagus, uterus, and bladder. While the lowered incidence may in part be due to the comparatively young age at which the animals are slaughtered, the roles of natural resistance or possible etiologic factors, e. g., inadequate exposure to carcinogens should be considered.

Finally, as Steiner and Bengston emphasize, a wide range of tumors is found in food-bearing animals, mesoblastic tumors being relatively commoner and carcinomas relatively less common in animals than in man. Certain tumors in these animals may aid in the classification of some human tumors by exhibiting gradations between histogenetically related tumors that are missing or as yet undescribed in human material. In addition, the wealth of endothelial and mesothelial tumors provided by cattle should be particularly valuable, since these types of tumors are rarely seen and poorly understood in man.

BIOSYNTHESIS OF LABILE METHYL GROUPS

Since the promise of understanding the genesis and, hence, the control of neoplastic growths seems to lie in a more complete grasp of the fundamental sciences, attention in recent years has been directed to the finer details of the mechanisms of intermediary metabolism. Studies have been made of the biologic significance of the methyl group, its transfer from one compound to another in vivo, and its origin. In the well-known lipotropic effect in the liver brought about by methionine,[1] it appears that this amino acid provides the labile methyl groups for the formation of choline, which promotes removal of the excess fat, and current evidence supports the view that endogenous creatine is formed from glycocyamine through transfer of the methyl group from methionine. Also, when growth of young animals is retarded by removal of this essential amino acid from the diet, resumption of growth follows addition of homocystine and choline (a methyl donor). This evidence for the indispensability of the methyl group raises a question about possible endogenous production. Long ago it was postulated [2] that the animal body must secure preformed methyl groups for purposes of detoxication and possibly for the formation of creatine and choline; however, it has been shown [3] that when the heavy hydrogen content of body water is increased, the methyl groups in the choline prepared from the tissues contain heavy hydrogen, an indication of the in vivo synthesis of the methyl group. Again, this is suggested by the observation of Bennett and co-workers [4] that certain rats continued to grow on a diet containing homocystine but devoid of preformed methyl groups. Intestinal bacteria are known to carry on synthesis of compounds of biochemical importance, but this possible exogenous source of the methyl groups was eliminated by repeating the experiment [5] on germ-free laboratory animals; the same suggestion of in vivo synthesis was secured. Additional support was provided by experiments [6] in which liver slices were incubated in a medium containing sodium formate, which was labeled with radioactive carbon; both the methionine and the choline isolated from the tissue contained the C^{14}.

In a recent report [7] additional evidence for the in vivo synthesis of labile methyl groups is brought forward. Sodium formate, methyl alcohol, formaldehyde, and sodium bircarbonate, each labeled with C^{14}, were injected into laboratory animals; the choline and the methionine prepared from the tissues contained the labeled carbon in every case, except when the bicarbonate was given. In another group of animals, C^{14}-formyl-L-phenylalanine was injected and C^{14}-methyl stearate was fed, and it was found that the carbon of the formyl radical and that of the methyl group of the ester can be demonstrated in the methyl group of the choline obtained from the tissue. Thus, it has been shown that the indispensable methyl group can be of endogenous origin; the raw materials, in the cases investigated, being simple one-carbon compounds, a hitherto unsuspected instance of the enormous factor of safety possessed by the animal organism.

SYMPOSIUM ON PESTICIDES

A panel discussion on the newer toxicants of medical, economic, and pharmaceutical interest has been announced in connection with the national meeting of the American Association for the Advancement of Science. This symposium will be held in the Philadelphia Municipal Auditorium, Philadelphia, Saturday afternoon, Dec. 29, 1951. A practical, informative discussion of the economic, hygienic, and therapeutic applications of the newer pesticidal toxicants will be provided for physicians, pharmacists, and other health personnel attending the meeting.

Many significant changes have taken place in recent years in the medical and public health employment of pesticides. Among these are the use of improved chemicals for the treatment of disease, the control of filth and disease-carrying insects and rodents, and the management of unwanted plants that harbor insects, blister the skin, or produce undesirable pollens. These advances and their meaning in terms of professional practice will be summarized by the panel discussants from the chemical, pharmacological, and pathological standpoint. The speakers include members of the Committee on Pesticides of the A. M. A. and others prominent in this field.

1. Tucker, H. F., and Eckstein, H. C.: Effect of Supplementary Methionine and Cystine on Production of Fatty Livers by Diet, J. Biol. Chem. **121**: 479, 1937.
2. Hofmeister, F.: Ueber Methylirung im Thierkörper, Arch. f. exper. Path. u. Pharmakol. **33**: 198, 1894.
3. du Vigneaud, V.; Simmonds, S.; Chandler, J. P., and Cohn, M.: Synthesis of Labile Methyl Groups in the White Rat, J. Biol. Chem. **159**: 755, 1945.
4. Bennett, M. A.; Medes, G., and Toennies, G.: Growth of Albino Rats on Choline-Free Diet in Which Homocystine Is the Only Sulfur-Containing Amino Acid, Growth **8**: 59, 1944.
5. du Vigneaud, V.; Ressler, C., and Rachele, J. H.: The Biological Synthesis of "Labile Methyl Groups," Science **112**: 267, 1950.
6. Sakami, W., and Welch, A. D.: Synthesis of Labile Methyl Groups by the Rat in Vivo and in Vitro, J. Biol. Chem. **187**: 379, 1950.
7. du Vigneaud, V., and others: One-Carbon Compounds in the Biosynthesis of the "Biologically Labile" Methyl Group, J. Am. Chem. Soc. **73**: 2782, 1951.

ORGANIZATION SECTION

SUMMARY OF ACTIVITIES AT THE LOS ANGELES CLINICAL SESSION

Los Angeles will long be remembered for the Fifth Clinical Session of the American Medical Association, at which the attendance far exceeded that of any of the previous Clinical Sessions. The Council on Scientific Assembly, which is charged by the constitution of the American Medical Association with the preparation of programs for the general assemblies, gratefully acknowledges the help of the Local Committee on Arrangements in developing the program for the Los Angeles meeting, and it commends especially the local co-chairmen, Drs. Walter Scott and J. Lafe Ludwig. The complete list of those who faithfully served on the Local Committee was published in THE JOURNAL, Nov. 3, page 955. The majority of those who appeared on the program were from the vicinity of Los Angeles, but speakers from other parts of the country also participated. The scientific program, arranged primarily to be of great interest to the general practitioner, was presented in the huge Shrine Convention Hall. It consisted of general lectures, scientific exhibits, color television of surgical operations and demonstrations, medical motion pictures, and technical exhibits. The House of Delegates held its meetings at the Biltmore Hotel, except for a special evening meeting in the auditorium of the Shrine Convention Hall, where some 7,000 persons were addressed by Senators Robert A. Taft and Harry F. Byrd. About 2,000 who came to this meeting could not be admitted because of lack of space in the auditorium.

The Scientific Program

The first speaker on the scientific program in the auditorium was Dr. Chevalier L. Jackson of Philadelphia, whose subject was the modern aspect of bronchoscopy. Dr. Jackson said that the bronchoscope was developed 50 years ago for the removal of foreign bodies from the lungs, but today 95% of its use is directed toward the diagnosis and treatment of disease, its three major uses being the removal of foreign bodies, the detection of tumors, and the treatment of tuberculosis. The modern management of tuberculosis requires the use of a bronchoscope to check the diagnosis and to plan treatment, which depends on the exact location and character of the lesion. The bronchoscope should be available in every well-equipped hospital and sanatorium. Dr. Jackson, in cooperation with Dr. John F. Heuber of Philadelphia, also demonstrated in the scientific exhibits the important anatomic factors to be considered in bronchoscopy.

The second general lecture was presented by Dr. Lewis A. Alesen of Los Angeles, whose subject was the biological interpretation of economics. Dr. Alesen, associate clinical professor of surgery at the College of Medical Evangelists and president-elect of the California Medical Society, urged the medical profession to take the lead in selling the American way of life. He said that compulsory health insurance is just one minor phase of the total socialistic program that its backers are trying to foist on the American people, in spite of the fact that in 2,500 instances throughout history where collectivism has been tried, it has not once succeeded.

The third general lecture was presented by Dr. Geza de Takats of Chicago, whose subject was the limitations of sympathectomy in the treatment of diastolic hypertension. In reviewing a series of hundreds of cases, Dr. de Takats emphasized the care that must be taken in the selection of patients for sympathectomy. He pointed out that sympathectomy would not be successful in hypertensive patients who are suffering from an advanced stage of nephrosclerosis. There were no deaths in this series from the operation, and nearly all of the patients are enjoying better health in spite of the fact that there was no reduction in blood pressure in some of them. In others the blood pressure fell to normal, in some the progressive rise of the blood pressure was arrested, and in some patients, an intense, intractable headache was relieved.

Dr. Tom D. Spies of Chicago, Cincinnati, and Birmingham, Ala., gave a general lecture on chronic alcoholism. Dr. Spies said there are 4 million heavy drinkers in the United States, of whom 1 million are considered alcoholic addicts. Many of these drinkers, he said, suffer from organic ailments and many others from nutritional deficiencies. The attending physician must determine which of these two elements is behind the alcoholism. If the alcoholic was nonpsychotic before he began to drink, his case is handled best by therapy aimed at reducing his psychosis, which in turn can reduce his drinking; but if the alcoholic became psychotic as a result of drinking the treatment is to attack his alcoholism by chemical means; the psychosis can then be reduced also. Short-term therapy, Dr. Spies said, is completely lost on the alcoholic, and treatment extending a few weeks or even a year generally is not effective. Dr. Spies is now in the midst of study of alcoholism to try to determine the effect of nutrition on the craving for alcohol.

Dr. Sidney A. Portis of Chicago discussed advancements in the treatment of cirrhosis of the liver. Dr. Portis said that while heretofore cirrhosis of the liver was associated mostly with alcoholism, malnutrition, and cholecystitis, the incidence of this disease is on the increase and that additional causes of cirrhosis of the liver are recognized today. Many researchers hold now that there is a relation between cirrhosis and acute infectious hepatitis, which was widespread during World War II. The sulfonamides, aureomycin, and some other drugs have caused liver dysfunction, as have transfusions of blood and the use of nonirradiated plasma. He said that blood transfusion can no longer be considered an innocuous procedure, unless the medical history of the donor is known. For the treatment of the active stages of cirrhosis of the liver, Dr. Portis recommended a high protein diet with vitamin C and vitamin B complex and fat soluble vitamins. The intravenous administration of dextrose is of the utmost importance. A high caloric, highly nutritious diet is the most important single aspect of the long-term management of chronic liver disease. Such a diet should contain at least 3,500 calories. The food should be palatable, and feedings should be given at frequent intervals. In spite of the recent emphasis on dietary deficiency in the development of cirrhosis of the liver, the traditional prohibition of the use of alcohol by those suffering from the disease has not been changed.

Dr. John Z. Bowers of Salt Lake City reported that a mysterious poisoning had resulted from the processing of beryllium in some industrial plants. Beryllium has many applications in modern industry. Dr. Bowers said that the poisoning was apparently caused by nonradioactive beryllium and involved the skin and lungs of the victims. A few of the poisoned victims merely were living in the vicinity of a plant when taken ill. A few of the patients died.

Dr. Elmer Belt of Los Angeles discussed the cause and treatment of impotence. He said that deep emotional conflicts are the predominant causes of impotence. Impotence may be a reflection of the patient's feeling of failure in his daily life, either in business or social activities. Dr. Belt advised physicians not to take a light view of this condition when it has been determined that the evidence is psychic and not due to organic causes.

Dr. Robert M. Shelton of Pasadena, Calif., pointed out the change in the attitude of physicians toward diet in diabetes mellitus. It is realized now, he said, that fat and not sugar requires special handling in the diabetic diet. Fat, he said, was once the mainstay of the diabetic diet, but now is suspect. Contrary to the past custom, it is now believed that the diabetic should not be starved for carbohydrates and should be given a

wider variety of foods than before and then given enough of the improved forms of insulin so that he can use the carbohydrates.

Dr. John M. Adams of Los Angeles discussed poliomyelitis and the coxsackie virus. He pointed out that group B of the coxsackie viruses is associated with diseases of the nervous system that simulate poliomyelitis and other forms of nonbacterial meningitis, while the group A viruses have been identified with an epidemic of acute, feverish illness characterized by blisters and ulcers of the throat. Discovery of these new viruses has resulted in some confusion in the diagnosis of poliomyelitis. Both the coxsackie and the poliomyelitis viruses are widespread in man.

Dr. Paul D. White of Boston said that medicine is well on its way to controlling rheumatic fever with its toll of lives from heart failure. Rheumatic fever, he said, has almost disappeared in areas where the standard of living is higher, such as suburban areas. This encouraging result is due to the development of the antibiotics and other drugs that control the streptococci. Dr. White emphasized also that many persons are still eating too much and that if they could reduce the unnecessary calories it would help to prevent many cases of heart diseases and diabetes.

Dr. Elmer Hess of Erie, Pa., discussed nephroptosis, pointing out that many persons with "floating kidneys" are having them either taken out or sewn back into place unnecessarily, as their painful symptoms often result from other causes. Dr. Hess reported on 241 such patients, in whom careful study showed that only 30 needed such an operation and that complete relief was obtained in only 14 of the 30 patients. He pointed out that the kidneys can move in their normal position as much as five inches.

Dr. Allyn J. McDowell of North Hollywood, Calif., discussed treatment in the primary management of burns. He said that the exposure method has been used with great success in the last two years. This method consists of the immobilization of the burned parts, with constant exposure to room air plus elevation of the burned parts to combat swelling. No dressings nor medicaments are applied. Dr. McDowell stressed that this method should not be considered as a routine treatment of all burns nor as a method to supplant all previous methods, but that fewer skin grafts will be necessary with the use of the exposure method of treating severe burns. In the event of an atomic disaster, it seems probable, at this time, that the exposure method may be the only practical method of treating a large number of severely burned persons.

Due to limitation of space, it is impossible to abstract all of the many interesting contributions to this portion of the scientific program. A complete list of the speakers and their subjects was published in THE JOURNAL, Nov. 3. Those interested in any particular subject may write direct to the author for additional information. Some of the papers may eventually be published in THE JOURNAL.

Color Television and Films

Color television was one of the most popular features of the program. Space was available for 700 physicians to be seated before 14 color television receivers, but it was insufficient to accommodate all of those who wished to see the surgical operations and clinics presented during the meeting. In the forenoon, members of the staffs of the University of Southern California Medical School, the College of Medical Evangelists, and the Los Angeles County Hospital presented surgical operations on the color television program. These included operations on the gallbladder, thyroid, breast, and bones, and circumcision, hemorrhoidectomy, and the repair of hernia and fistulas. Childbirth by cesarean section was also shown. In the afternoon there were clinical demonstrations of the treatment of skin diseases, diabetes, cardiovascular diseases, tumors, poliomyelitis, and the care of premature infants. The surgeon described the operation as he proceeded step by step, his voice being carried by a small microphone tucked in his surgical mask. The television signals originated in the Los Angeles County Hospital and were relayed seven miles through the air to the Shrine Convention Hall. Of special interest on this program was an operation for coarctation of the aorta. The operation was performed by Dr. John C. Jones of Los Angeles on a man 20 years of age, and it was viewed on television not only at the American Medical Association meeting but at the University of Chicago Medical Center and at the headquarters of the Columbia Broadcasting System in New York City, where medical educators, medical school deans, and other physicians were assembled before television receivers. This was the first transcontinental transmission of color television. The operation was performed Friday afternoon, after the various other portions of the program were over, and the fact that 700 persons remained to view this operation indicates that physicians are greatly interested in medical color television in the field of medical education. It was especially interesting to learn that Dr. Walter W. Higgs of Park Rapids, Minn., who first diagnosed the lesion in this young man some 10 years ago, flew to Chicago to watch the operation on his former patient on the television screen at the Chicago Medical Center.

The entire color television program was directed and sponsored by the Smith, Kline, and French Laboratories of Philadelphia, which owns and operates its own equipment, which is specially designed for medical purposes by the Columbia Broadcasting System. The Los Angeles program was the 29th such program that this Philadelphia pharmaceutical firm has presented at medical meetings throughout the United States, Canada, and Europe as a contribution to medical education.

The motion picture program, which was arranged with the assistance of the Committee on Medical Motion Pictures, comprised 11 different films, each of which was shown once each day. Films on the following subjects were presented. The diagnosis of poliomyelitis, self preservation in an atomic attack, the exfoliative cytologic method in the diagnosis of gastric cancer, surgical approaches to the knee joint, physical medicine in the home treatment of arthritis, early diagnosis of uterine cancer, surgical management of primary hyperthyroidism, extraperitoneal cesarian section, the bone bank, operation blood bank, and heparin in the prevention and treatment of thrombosis. The number of seats available for this program was insufficient on the first day and thereafter was enlarged to accommodate 250 persons. The total number of persons counted in the motion picture hall during the four-day meeting was 4,149. Again the medical motion picture demonstrated its usefulness as a means of postgraduate education.

The Scientific Exhibits

The scientific exhibits, as always at A. M. A. meetings, attracted a large attendence. At this meeting the nearly 90 exhibits were correlated with the scientific sessions in order to emphasize the subjects under discussion. Among the highlights was the exhibit on the treatment of fractures, at which several physicians demonstrated the latest techniques and actually applied plaster casts where such treatment was necessary. Continuous demonstrations were presented on the treatment of the fracture of the lower end of the radius, fracture of the ankle, and compression fracture of the spine. The exhibit on fractures has for many years been a popular feature of the scientific exhibits. Dr. Kellogg Speed of Chicago, who has been chairman of the Committee on Fractures for some 25 years, was awarded a certificate of merit by the House of Delegates at this meeting. Another highlight was the exhibit symposium on overweight, nutrition, and health, with a question and answer conference, presented jointly by the Council on Foods and Nutrition of the American Medical Association, the American Dietetic Association, the Metropolitan Life Insurance Company, the U. S. Public Health Service, and the Department of Nutrition of Harvard University. Adjacent to this exhibit was a small auditorium where films were shown to demonstrate the effects of overeating and the proper kinds of diet. In this auditorium competent leaders discussed different phases of the problem of overweight and nutrition and answered questions that had been mailed in or that came from the floor. In all, there were five exhibits on this subject, with continuous demonstrations throughout the week.

At the exhibit demonstrating the danger of noise as a health hazard, the physiology of the ear was reviewed at a booth spon-

V 14
1951

sored by the Council on Physical Medicine and Rehabilitation. Specialists on job placement and rehabilitation discussed the rehabilitation and reeducation of patients suffering from ear disorders that have developed along with the industrial age. This booth was sponsored by the Council on Industrial Health. In the booth on audiometry and ear protection, sponsored by the American Academy of Laryngology and Otology, demonstrations were given on measuring the hearing acuity of the human ear. Members of the Acoustical Society of America presented short demonstrations of the fundamentals of the physics of noise. The Acoustical Materials Association demonstrated how to condition ceilings and walls in hospitals, industrial plants, and offices so that the noise hazard would be reduced.

The new method of artificial respiration, known as the back-pressure-arm lift method, attracted wide attention at this meeting and in the newspapers. THE JOURNAL, Dec. 8, 1951, page 1444, contains an article on this method in comparison with the older methods of artificial respiration. Dr. Archer S. Gordon, senior author of the article in THE JOURNAL, was present to aid in this demonstration.

Among the other exhibits were atomic medicine in general practice; problems of delivery—manikin demonstrations; tests for intoxication; definitive and differential diagnosis of poliomyelitis; diabetes detection by the physician; U. S. Air Force patient air evacuation system; practical gynecology; and evaluating the disabilities of the cerebral palsied. A complete list of the scientific exhibits appeared in THE JOURNAL, Nov. 3, page 962.

Technical Exhibits

After registering at the Shrine Convention Hall, visitors at the Los Angeles Clinical Session entered the technical exhibits, which occupied the entire main floor. There more than 150 manufacturers of medical equipment, of pharmaceutical and food products and medical book publishers displayed their products in a most attractive manner. This large room was crowded from morning until evening. Reprints of medical articles, descriptions of the contents of products, and, in many cases, samples were distributed. At some booths the exhibitors served samples of foods, and hot and cold soft drinks. The technical exhibits demonstrated important developments, new procedures and techniques, and other medical advances. The visitor left this room with new knowledge, and the commercial representatives obtained new ideas about their products, both to the ultimate benefit of the patient. Much interest was shown in two photomurals in the Walgreen exhibit showing 50 years of progress in the development of the Walgreen prescription service since the senior Walgreen opened his first drug store in Chicago in 1901. At the Devereux Schools exhibit, physicians learned that the schools provide facilities for the education and treatment of children who have academic or emotional difficulties. The State Journal Advertising Bureau exhibit created much interest. The 34 journals comprising the bureau have the same advertising standards as the A. M. A. publications. It was interesting to observe here that a new journal, the Maryland Medical Journal, will publish its first issue in January, 1952.

ABSTRACT OF PROCEEDINGS OF THE HOUSE OF DELEGATES AT THE CLINICAL SESSION IN LOS ANGELES, CALIF., DEC. 4-7, 1951

The actions of the House of Delegates at the Los Angeles Session are herewith abstracted so that the readers may have this information in digest form. The official proceedings will be made available, as in the past, in a booklet, which will be sent to all members of the House of Delegates and officers of the American Medical Association by the Secretary. This booklet will not be available for several weeks.—ED.

Report of Reference Committee on Credentials

Dr. H. Russell Brown, Chairman, reported that 182 delegates had registered, and the Speaker announced that a quorum was present.

Invocation

The Rt. Rev. Msgr. Thomas J. O'Dwyer of Los Angeles delivered the following invocation:

Direct, we beseech Thee, O Lord, all our actions by Thy holy inspiration, and carry these conventions on by Thy gracious assistance, that these conventions and all officers and members assembled therein may begin their deliberations from Thee and through Thee, and that they may be happily and successfully ended.

We pray Thee, O God of wisdom and justice, through whom authority is rightly administered, laws enacted and judgments decreed, assist with Thy holy spirit of counsel not only all the members of the medical societies of the United States but all who are appointed in city, state and nation to guard not only our health but our civic and social welfare.

We pray Thee at this time of crisis that the light of Thy divine wisdom many shine on the deliberations of our legislatures in the states and the deliberations of our Congress, that the laws and proceedings may be framed for our rule and government so that they may tend to the preservation of peace, the promotion of national happiness, the increase of industry, sobriety and useful knowledge, and may it perpetuate to us the blessings of liberty.

In this time of great crisis, we recommend to Thee, Almighty God, through Thy unbounded mercy, all our citizens throughout the United States, that they may be blessed in the knowledge and sanctified in the observance of Thy most holy law, and that they may be preserved in union and in that peace which the world cannot give. We ask Thy blessings on all here assembled. Amen.

General Practitioner of the Year

Nominations of Drs. Everett Beam Lattimore, Shelby, N. C., Clayton Willison, Sault Ste. Marie, Mich., and A. C. Yoder, Goshen, Ind., were presented by Dr. Dwight H. Murray, Chairman, Board of Trustees. On a second ballot the House of Delegates elected Dr. A. C. Yoder, Goshen, Ind., the General Practitioner of the year.

Telegram from California Teachers Association, Southern Section

The Secretary read a telegram addressed to the House of Delegates by J. Stanley Brode, President, California Teachers Association, Southern Section, and a suggested reply by the Speaker, Dr. F. F. Borzell, as follows:

We extend to you our warm and hearty greeting. We honor you as representatives of men of medicine, who not only have been close to our profession in the task of dispelling ignorance and misunderstanding in matters of health, but have been so cooperative in protecting the welfare of our charges, the children and youth of America.

You have our confidence in the manner and competence with which you do your work. We feel that we merit from you a like confidence in our competence in the tremendous task that is ours. We hope that you will make use of our AMA-NEA Joint Committee not only to consider the methods and practices of teaching health and of maintaining health standards of the schools and school personnel, but will use this "tie" also to learn something of the true nature and extent of current problems of education.

On behalf of the 30,000 members of the California Teachers Association, Southern Section Directors we extend to you our cordial greeting and sincere desire to cooperate with you and the profession you represent both during your stay here and throughout the year.

SUGGESTED REPLY

It was the unanimous desire of the House of Delegates of the American Medical Association to have me express our deep appreciation of your wire of December 3. Our Association will do everything it can to cooperate with you in the task that both of us have before us. We appreciate the past cooperation of your Association with ours and we are glad to have it continue.

The telegram was received by the House and the Secretary instructed to transmit the suggested reply.

Address of Speaker

The Speaker presented the following address which was referred to the Reference Committee on Reports of Officers:

To the Members of the House of Delegates of the American Medical Association:

The Speaker intends to continue the policy adopted by this House some years ago of conservation of time and exercise of brevity, but not at the expense of the deliberation necessary to arrive at sound conclusions. Therefore, my remarks will be confined to matters referable to the conduct of the House.

We welcome those who are sitting in this body for the first time. For your benefit and to refresh the memory of our older delegates, let me remind you of some details intended to expedite procedure and at the same time give to all ample opportunity for discussion and debate.

All resolutions must be presented in proper form—providing eight copies. A staff of stenographers are at your service for this purpose.

In addressing the Chair, please announce your name and the state or group you represent. This is necessary for the benefit of the record as well as your listeners.

In presenting resolutions, try to confine your reading to the resolution, omitting the "Whereas" portions. The arguments or reasons for the resolution are matters for presentation and argument in the reference committee hearings.

Reference committees will probably convene at 9:00 o'clock tomorrow morning. The several committees will remain in session long enough to give all an opportunity to be heard.

If any resolution is of such a nature as to call for consideration in executive session, the procedure is that the resolution be presented by title with the request for referral to the Reference Committee on Executive Session. This reference committee sitting in executive session will then consider the advisability or necessity of consideration in either closed or executive session. It will make its recommendations to the House. The time of such closed or executive session as decided by the House shall then be determined.

It is the privilege and responsibility of reference committees to call in anyone for advice or assistance in arriving at conclusions and preparation of reports. Because of past experiences the Chair would recommend that whenever a report may have a potential impact on our public relations, the committee call into conference our public relations or publicity experts and, if necessary, our legal department before submitting the report to the House. A simple change of wording may well be the difference between intelligent understanding of the intent of the House and misinterpretation with resulting faulty publicity.

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- George E. Armstrong, U. S. A.
- Clarence J. Brown, U. S. N.
- Dan C. Ogle, U. S. A. F.

MISCELLANEOUS BUSINESS:
- Warren W. Furey, *Chairman*, Illinois
- Patrick J. Sullivan, Massachusetts
- Elmer P. Weigel, New Jersey
- J. Stanley Kenney, New York
- Carl A. Lincke, Ohio

V 14
1951

TELLERS:

John F. Conway, *Chairman,* New Mexico
Willard A. Wright, North Dakota
Hoyt B. Woolley, Idaho
John J. Curley, Massachusetts
Frank J. Elias, Minnesota

SERGEANTS-AT-ARMS:

Samuel J. McClendon, *Master Sergeant,* California
Edward P. Flood, New York
J. Wallace Hurff, New Jersey

REPORT OF REFERENCE COMMITTEE ON REPORTS OF OFFICERS

Dr. Carlton E. Wertz, Chairman, presented the following report, which was adopted:

Your reference committee wishes to commend your Speaker on his desire to conduct the affairs of this House in such a way as to conserve time, but not at the expense of the necessary deliberations to arrive at sound conclusions. Your committee wishes to emphasize that all resolutions should be presented in proper form, typed on the special forms which are available both at the meetings of the House or from the office in Chicago in advance. The proper preparation of all resolutions greatly facilitates the work of the Speaker and your reference committees. Your Speaker is supported in his caution in the use of words in reference committee reports and the danger of the wrong interpretation that might sometimes derive therefrom. The committee desires to express its great appreciation of the ability of the Speaker in his duties as presiding officer.

Address of the President, Dr. John W. Cline

Dr. John W. Cline, President, presented the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker, Members of the House of Delegates:

The atmosphere in which we meet here in Los Angeles is far different from that surrounding the Clinical Session in St. Louis, three years ago. In the intervening period, important and significant changes have taken place. The threat that we faced three years ago unified the profession to a degree never previously known. It has become a cohesive body capable of greater concerted and more effective action.

It has been said that experience is the greatest of teachers. We have learned many things that we should have known without having had to learn the hard way. In retrospect, it is always easy to recognize errors and to criticize. The past is history, and its principal importance lies in the fact that we may draw lessons from it that will be of value to us in the future.

The American Medical Association should never have permitted itself to be placed in a defensive position. It was, and is, a great public service organization conducting its activities in the public interest. We were sufficiently naïve to believe that this alone would protect us from the false accusations and malicious slander of small-minded, self-seeking persons who, as the result of political accident, found themselves in positions for which their narrow experience and limited concepts could scarcely be considered adequate qualification.

We have learned that a profession with high ethical standards and devoted to the public welfare is not immune to scurrilous attack or the now too familiar smear methods employed by demagogues and socialist-minded bureaucrats. Necessity has taught us to meet such assaults vigorously and effectively. As a consequence, American Medicine is no longer a wise choice as a whipping boy. The outstanding lesson to be learned from this experience is that we must never again allow ourselves to be placed on the defensive. While we labor to improve and expand our service to the American people we must be alert and keep our powder dry.

American Medicine has become a more important part of our integrated society as it has grown and advanced and as the interest of the public in matters of health and medical care has increased. The events of the past few years have shown us that we may not have been as conscious of our faults as we should have been. As an important, and in some ways a favored, segment of society we have heavy responsibilities to society as a whole.

Perhaps our obligations are no greater than are those of others who supply essential service in other fields. On the other hand, unless we measure up to them we shall not be accorded the respect to which we aspire and our freedom will be in jeopardy. We know that freedom of medical research, freedom of medical education, and freedom of medical practice are essential to a continuously improving standard of medical care. The loss of those freedoms would lead inevitably to a deterioration in the quality of medical care. The withering effect of bureaucratic control has been obvious throughout the world.

Let us take stock of our strengths and our weaknesses. Let us make that evaluation known, and let us seek the advice and assistance of others in improving the service we render.

One of our strong points is the nature of the American Medical Association and the character of its activities. Most of its nine million dollar budget is assigned to councils, committees, bureaus and departments that are devoting full time to activities leading directly or indirectly to improvement in the medical welfare of the public. Even a cursory review of these efforts, programs and projects will provide conclusive proof of that fact.

One of our weaknesses is that we have been content to do these things without making them known to the persons who benefit by them. Dissemination of this information would be far more effective in establishing the true nature of our organization than efforts to reply to attacks on us. Once the public understands the American Medical Association and its aims and objectives the assaults on medicine will be ineffectual.

Scientific medicine in the United States has progressed to a point never reached before any place in the world. Our standards of medical education and medical care have never been equaled, and these are the developments wrought by a free profession and educational institutions unhampered by governmental control. The principal problem has been and, to a large extent, remains the best means of distributing these advantages to all the people. In the main the approach is through voluntary health insurance. The growth and development of plans offering this coverage has been gratifying. When one realizes the short space of time in which this has been achieved it must be considered to represent satisfactory progress.

More than 77,000,000 persons now have some coverage against the costs of illness. About 22,000,000 are enrolled in Blue Shield and other medically sponsored plans, and 44,000,000 are enrolled in Blue Cross plans. This growth has been phenomenal. More than half our population has protection from the economic hazards of illness. On the other hand, we must not only expand the numbers enrolled but improve our plans. The exact direction the improvement should follow is not equally clear. As of this time, no one can say what will constitute the most desirable coverage in the future. The multiplicity and diverse nature of the plans creates a healthy situation. The very elasticity of the programs permits and encourages experimentation. The orderly process of evolution will produce a form that at some future date will be generally agreed on as embodying the most nearly ideal type of coverage. This process will not be limited by the legal enactments or the arbitrary decisions of government agencies inherent in any scheme of socialized medicine.

Certain plans have developed coverage for catastrophies that has proved workable, and the approach has been somewhat different in various parts of the country. More needs to be done in this direction and unquestionably will be done.

A few plans have begun experiments designed to include the older age groups and on an individual basis. More must and will be done along this line. We must proceed with cautious determination to find methods that will provide realistic coverage without endangering the solvency of our plans. The experience gained by numerous limited enrolments ultimately will demonstrate a satisfactory method free from the hazards of any all-inclusive, extensive plan blindly applied to large numbers.

The vast majority of our members support the prepayment mechanisms of distribution of the costs of medical care, but, here and there, individuals and some groups have withheld cooperation or give only reluctant support. There can be little question that voluntary health insurance is our greatest bulwark

against socialized medicine. Even the proponents of socialized medicine clearly recognize this. We must have the full and vigorous support of the entire profession in this program.

The care of the indigent and near-indigent patient always has been and properly should be the responsibility of community charities, and local or state government. Conditions vary widely in different parts of the country. The studies we have conducted and are presently carrying out have been and will be helpful in improving this care.

The distribution of medical care is still not equal in all areas. Neither are other essential services, but the degree of maldistribution is far less than has been alleged. We have made substantial strides in cooperation with farm organizations in our rural medical care programs, the encouragement of general practice and the joint plans of the American Medical Association and the medical schools to interest young physicians in rural practice. Our physicians placement service, in conjunction with those of the state associations, will bring about further improvement. The public must realize that physicians will settle in areas where it is possible for them to practice good medicine. If proper facilities are provided by communities needing physicians, there will be little difficulty in inducing well-trained physicians to locate in them. This effort is the joint responsibility of the profession and the public.

We have opposed and must continue to oppose federal aid to medical education as proposed in S. 337, because of the inherent threat to the freedom of education. We recognize that many of our medical schools are in financial difficulty. The program inaugurated one year ago has progressed fairly well, but the response by individual physicians has not been nearly so great as it should have been.

Each one of us owes a debt to medical education. There always has been a discrepancy between the cost of education and tuition. No one of us contributed the full expense of his education in tuition. Let us discharge this debt promptly. I hope every state association and every county society will establish active agencies to bring this about.

We have in effect accepted a challenge, and it is up to us to make good. I hope every member of the House will return home determined to see this campaign grow in strength and effectiveness.

Let us consider briefly what our patients object to in their medical care. In my travels about the country, and in letters I have received, the same or similar complaints against the profession recur with some frequency. The principal complaints are the cost of medical care, real or fancied overcharges, and the lack of availability of medical care.

Our members must be informed to a greater extent concerning the costs of medical care. The total cost of medical care has risen less than the cost of living, and the only important item of it that has risen to a greater extent is the per diem rate of hospitalization. This must be emphasized to our patients, and we must show them the reasons for increased hospital costs. In spite of the expansion of methods of diagnosis and treatment, the most significant item in the cost of hospital operation is labor. In most well-operated institutions it represents from 60 to 70 per cent of the total. Higher salaries and higher wages are the most important factor in advanced per diem costs. The average expense per illness has increased relatively little, owing to shortened periods of hospitalization. The heavy expense of serious and protracted illness should be guarded against by enrolment in the voluntary plans.

A good grievance committee, by whatever name called, operating effectively and adequately publicized, is the best method of dealing with the small percentage of the profession who are guilty of exorbitant charges. We have no place in our medical organizations for the chiseler or the fee-gouger. Let us see that the public knows this, and let us encourage patients to bring any instances of these practices or other unethical conduct to the attention of the county or state societies. These then must be dealt with vigorously and effectively. It has been my experience that where this is best done the public has greater confidence in the profession and complaints against it are minimal. My mail would indicate that the situation already has improved to a considerable extent, but more needs to be done.

It should be pointed out that a major portion of the complaints against individual physicians have their origin in misunderstanding and that this misunderstanding begins with the first visit by the patient to the physician's office or that of the physician to the patient's home. Greater effort to eliminate sources of misunderstanding will result in greatly enhanced patient-physician relationship.

Medical care may be required at any time and must always be available. The central telephone exchange methods work well in our larger centers, and cooperative arrangements in smaller communities can take care of the need. Medicine perhaps has no more vigorous critic than the person who experiences unusual difficulty in obtaining the medical care he believes essential for himself or his family.

As individuals and as organizations we must work more closely with other individuals and organizations sincerely interested in sound efforts to improve the medical welfare of the American people. We must work more closely with allied groups, such as the American Hospital Association, the American Dental Association, the American Nurses Association, the American Public Health Association and other professional organizations. Interprofessional committees at the state and local levels as well as on the national plane will be of mutual advantage and will result in benefit to the public. An excellent example of such cooperation is to be found in the successful conclusion of the negotiations in the matter of hospital standardization.

We must take greater interest and cooperate more fully with other organizations that have laudable purposes. Cooperation with civic organizations, veterans' groups and labor, business, industrial and professional organizations will result in improved health programs of proper type. We of medicine must furnish leadership in matters of health and medical care. No one else can do so with the requisite knowledge and understanding.

Within our own organization we must strive for efficiency and effective action. There is a tendency for bureaucracy to grow in large organizations somewhat after the fashion of government. Lines of authority must be clear, and those with authority must be held responsible. Our organization must be sufficiently elastic to meet any situation that may arise, but it cannot afford the luxury of inefficiency. We require the wholehearted support of the full membership to make our programs as successful as they should be.

The National Education Campaign is being curtailed because of the progress that has been made in building public support for our cause. The expenditures for this purpose will represent a very minor portion of our budget next year. In the past year the expenditures of the National Education Campaign were approximately $500,000 and will be about $250,000 for the coming year. Contrast that, if you will, with the total American Medical Association budget of $9,000,000. This emphasizes the need for the greatest possible efficiency in our entire organization. To even greater extent it points up the necessity for active vigorous support of the policies and programs of the Association by every member.

In the resolutions introduced into the House and in our official pronouncements we should be mindful of erroneous impressions that may be created by failure to exercise sufficient care in terminology. We should be as specific as possible in our expressions. Generalization may give offense when none was intended and thereby damage the public relations of the Association.

In visiting different states I have found that in some the Woman's Auxiliary has not been given the encouragement and assistance it deserves. It represents the greatest potential force we can have in the field of public relations. The failure of some physicians to recognize that fact has hampered its effectiveness. The auxiliaries need to be encouraged and guided. If this be done adequately we will obtain almost unlimited and energetic support for our programs. The American Medical Association, the state associations and the county societies are limited in the field of political activity to expressions of opinion on issues. These organizations cannot and do not enter into election campaigns. The same restrictions apply to the auxiliaries.

While we are physicians, we first of all are citizens, and we do not foreswear the rights and duties of citizenship by becoming doctors. The level of citizenship of the physician always has been high but too often of the passive type. It has been said with some justice that persons in a democracy get the kind of government they deserve. Failure to exercise the rights and duties of citizenship results in a type of government none of us desires.

V 14
1951

The experience of the past three years has taught us to distinguish between those figures in public life who adhere to American democratic principles and who are willing to defend them publicly and those who believe in socialistic ideas or will espouse them for political advantage.

Party labels mean little. It is the ability, convictions, character and courage of the individual that count. We have watched the creeping advance of socialism over past years. The efforts to socialize medicine are but a part of the broad front of socialization and cannot be separated from it. Who can envision an island of medical freedom in a sea of socialism?

The next year will be one of important decision. If we are to protect our heritage of freedom, if we are to preserve the standards of medical care, this decision must be the correct one. Should this country continue on the road that inevitably leads to socialism those things we cherish will be irrevocably lost. The history of other nations clearly demonstrates that beyond a certain point there is no easy way of return. It may not be easy to stop the progress toward socialism, but it is far easier and more realistic to halt it than to try to eliminate it after it has become an accomplished fact.

I urge you, not as members of this Association, but as citizens, to act as individuals, in informal groups and in association with others. I urge you to be militant and to be determined. The time to begin is not six months hence, but now.

The future freedom of medicine and the future of our country depend on the events of the coming year. Let it not be said that we who clearly see the importance of this decision were in default of our duties as physicians and citizens.

Report of Reference Committee on Reports of Officers

Dr. Carlton E. Wertz, Chairman, presented the following report of the Reference Committee on Reports of Officers, which was adopted:

Your committee believes that the address of our President was a masterful presentation of medicine's position in our American life. He stressed many points, some of which we would like to recall to your attention for re-emphasis.

1. We must never allow ourselves to be placed on the defensive again.

2. That a major portion of the vast activities of the American Medical Association are devoted directly or indirectly to the medical welfare of the public.

3. With regard to the distribution of medical care, the main approach has been through voluntary health insurance. The full and vigorous support of the entire profession must be had in this program of voluntary health insurance. It is our greatest bulwark against socialized medicine.

4. The debt each of us owes to medical education is another point stressed by the President. All physicians are urged to contribute to the American Medical Education Foundation. Aid to medical education is every doctor's business.

5. Interest in, and cooperation with, community groups. Leadership must be furnished in all matters of health and medical care.

6. The encouragement and assistance to the Woman's Auxiliary is of vital importance. They should have the full support of the profession.

7. The right and duty of all physicians as American citizens to act as individuals, and in associations with others to be militant and determined in the coming year.

It is gratifying to note the comprehensive viewpoint expressed by the President and it is hoped that all physicians will read the address in full.

Announcement of Contribution to American Medical Education Foundation

Dr. Dwight H. Murray, Chairman, Board of Trustees, presented the following announcement:

The Board of Trustees reports to the House of Delegates that a half million dollars has been appropriated to the American Medical Education Foundation for the calendar year 1952. This is the second contribution made by the American Medical Association to the American Medical Education Foundation, the first allocation of funds totalling one half million dollars having been made in 1950 for the year 1951.

In announcing this second contribution, the Board of Trustees wishes to underscore the importance of this voluntary campaign to raise funds for medical schools. Your support in this vital project has already been urged by Dr. Cline in his address to this House of Delegates. The Board of Trustees wishes to reaffirm its support of this program and to assure the House of Delegates that it intends to carry it on with utmost energy. We are hopeful that technics will be developed and actions taken that will assure a substantial flow of funds from voluntary sources to the medical schools each year that will significantly assist the schools to meet the financial problems they face.

The House of Delegates should also understand that the American Medical Association is underwriting the total expenses involved in raising these funds for medical schools. Every dollar contributed is being allocated to the medical schools.

Presentation of President-Elect Louis H. Bauer

The Speaker presented to the House the President-Elect, Dr. Louis H. Bauer.

Presentation of Vice President Oscar B. Hunter and Invited Guests

The Vice President, Dr. Oscar B. Hunter, was presented to the House by the Speaker, and Dr. Hunter, in turn, introduced the following distinguished guests: Mr. Lewis Gough, Past Vice Commander, American Legion; Mr. Walter Neeley, Aide to Commander Wilson, American Legion; Mr. Newell W. Stewart, retiring Chairman of the House of Delegates, American Pharmaceutical Association; Dr. Harold Hillenbrand, Secretary, American Dental Association; Mr. Albert V. Whitehall, Director, Washington Office, American Hospital Association; Dr. A. J. J. Rourke, President, American Hospital Association, and Mr. Donald Wilson, Commander of the American Legion.

Address of President of American Hospital Association, Dr. A. J. J. Rourke

Dr. A. J. J. Rourke, President, American Hospital Association, addressed the House as follows:

Mr. Speaker, Dr. Hunter and Friends: It is a real pleasure to receive an invitation from the American Medical Association for the President of the American Hospital Association to say a few words to you this morning.

Things are different and things are changing. It reminds me of the story of the man who called the doctor and said, "Come over quickly. My wife is very ill. I am sure she has appendicitis and needs an operation." The doctor said, "Why, I took her appendix out three years ago. Whoever heard of a second appendix?" The fellow said, "That's right, doc; but did you ever hear of a second wife?" I say things are changing the same way, because last fall Dr. John Cline came before the American Hospital Association and addressed us. It was a new step in the progress of our organization to have that close affiliation with you, and now to be here the same thing holds true.

I think the important thing for our two associations during the coming year is for us to be able to differentiate between the straw men which are put up as problems for us to beat down. There are some real differences, some real problems, some major factors to be discussed, but I hope that your organization and ours will be able to differentiate between them. Your President, Dr. Cline, this morning said that the public had to be reminded of some of the positive accomplishments of your profession, and I agree with him very thoroughly. Most of you in the room today can well remember when you worked behind an iron curtain in treating many of the diseases which we have dealt with, and we have removed that iron curtain and today are carrying on successfully medical miracles in our hospitals and by members of your profession.

I would like to echo the words of Dr. John Cline in saying that this interim committee that worked out the Joint Commission on Hospital Accreditation deserves a great deal of credit. It is another milestone in our experience of cooperation with your organization.

We also had working during the past year, under the able leadership of your Past President, Dr. Elmer Henderson, and our Past President, Dr. Charles Wilinsky, a committee which met

once in an attempt to work over some of the matters of mutual concern to us. We have again reappointed that committee and are awaiting an opportunity when Dr. Cline and myself, as Presidents of the two organizations, can come together and carry on to a further point the matters which Dr. Henderson and Dr. Wilinsky carried on, and there are a number of mutual problems.

This matter of economics is an important one, and it delighted me this morning to hear Dr. John Cline say to you folks that it is a responsibility of the physician to point out to his patients why hospital costs are what they are today and also to point out that the hospital stay has been reduced to such a point that the total hospitalization does not amount to as much.

In addition, we have the problem of medical education, and I want you to know that the American Hospital Association is keenly interested in that, because I am sure the research that has been done by the few malcontents in our organization has proven beyond a doubt that hospitals cannot be run without doctors. Therefore it is important that we should have an interest in the education of the young physician as he comes along, and, most important in that, is the matter of clinical material. You and I remember that we were only able to learn our medicine because we had patients demonstrating the diseases that our professors could point out to us, and today we are having a great deal of difficulty getting clinical material in our hospitals for this purpose, and I think, in addition to giving your money, which you have done so beautifully, as Dr. Murray has pointed out to you, in this wonderful gift of a half million dollars, I trust each and every physician in this country will assume the responsibility of finding at least one patient in his private practice yearly who would be willing to enter the teaching services of the grand medical schools in this country. In doing that, you and I know that you are not offering them second class or steerage medical care, because it is you members of the American Medical Association who are directing medical care in our teaching hospitals throughout this country.

It gives me a great deal of pleasure to see over and over again greater and greater cooperation between our two organizations. I would like just to relate one short incident. I came back from Hawaii about two weeks ago where I had the pleasure of conducting, with a co-sponsor, your own Dr. Leveroos, of the Council on Medical Education and Hospitals, a two-day institute in hospital operation. I want to point out to you that this is certainly a new innovation, that the American Medical Association and the American Hospital Association has conducted an institute in hospital operation.

Again let me thank you for the kindness that you have shown me in allowing me to appear before your House of Delegates, and may I extend to you my very best wishes for a successful clinical session here in Los Angeles. Thank you, sir.

Address of Mr. Donald Wilson, Commander, American Legion

Mr. Donald Wilson, Commander of the American Legion, presented to the House the following address:

Mr. Speaker, Dr. Hunter and Members of the House of Delegates: You honor me by your invitation to present myself before you for a few remarks. I am particularly honored that you have given me your permission to say something to you after you learned that I was by profession a lawyer. Having been on the receiving rather than the giving end of most of the speaking when I am associatd with doctors, you can understand full well how extremely honored I am on this occasion to have practically free rein, at least for a few moments.

I am reminded of the perennial dispute that goes on between your profession and my own by the story of the engineer who was injected into the argument with the doctor and the lawyer as to which of the three came from the most time-honored profession. The doctor, as is so frequently his wont, spoke first and said that he believed he could quote Scripture and prove that his profession was the most time-honored of the three. He said, "After all, you remember that Eve was created out of the rib of Adam, and that was basically a surgical proposition, so the Scripture itself will prove that the medical profession is the most time honored." The engineer was something of an orator and an arguer, and he looked at the doctor and said, "Doctor, I hadn't planned to use Scripture to prove my point, but since you have brought it up, you should be reminded that before Adam and Eve, God was said to have created order out of chaos, and that, of course, was basically an engineering function, so, by your own argument, by your own reference, I have demonstrated that the engineering profession is far more time honored than your own." The lawyer, as is his custom, spoke last and said, with a look of disdain at both of his colleagues, "Who do you fellows think made chaos?" I see you think that the lawyer did it!

Your profession, in all seriousness, and I say this even with due regard for my own profession, is the most honored of all of the professions in America. Members of your profession are respected not only for their professional views but also for their opinions on civic and social questions. There is no single individual in the average American community whose views are more respected than the community doctor. You, therefore, because of the extreme respect with which you are treated, have a tremendous obligation toward the American public. You have the obligation of informing yourselves as to all types of civic and social problems. You have the tremendous challenge which you meet so wonderfully to make yourselves as professionally competent as possible and to have the best conceivable medical administration that you can. Yours is a real challenge that comes because of the respect with which you are treated.

You have been having, during the past many years, one of the most difficult battles that any profession has ever had to face. You are in the vanguard, I would have you remember, of the resistance that America basically feels toward the encroaching forces of socialism. Yours is a profession that has been singled out. Yours has been a battle that is noteworthy and will become more noteworthy. I was delighted to read in the papers yesterday, as I came into Los Angeles, and delighted to hear something of a repetition of it by Dr. Cline today, that you plan to conduct a more aggressive, a more positive battle, than ever before, in order to overcome the forces of paralysis which would beset your own profession. You can never afford to be placed in a completely defensive position. You can't afford to have any governmental agency or bureau or any other group in America point to a medical problem of any significance whatsoever that you have not already thoroughly considered and come up with a definite answer.

You have issued a call for support. You have asked that the body of American public opinion place itself behind you in your effort to overcome the creeping menace that you see so clearly. I appear here as the representative of the American Legion, the greatest single organization, aside from your own, which is also irrevocably opposed to the socialization of American medicine.

Our interest in American medicine springs from the fact that the primary reason for our existence is in the care of those of our comrades who were wounded in one or the other of the two great world conflicts, either mentally or physically. We rely on the untrammeled genius of American medicine to help us make good on the pledge that we made to those comrades of ours. We naturally, therefore, resist anything that would enslave the American medical mind or anything that would even tend to cut down on the remarkable genius that has been American medicine's in days gone by. Our interest, however, it not only with veterans' medicine. You must remember that as an organization of over three million members we have, because of intimate family connections, approximately fifteen million Americans who feel the same way that we do about the subject. So if you want a body of American public opinion with you, let me assure you that you have it with you in the American Legion.

We, of course, have problems just as you do. On some of the problems you and we have found ourselves not necessarily in disagreement but approaching the basic problem from a slightly different tack. We would issue to you something of a warning for such use as you might care to make of it. There are many forces operating in this country, not all of which are directly advocating the socialism of your profession which you fear so much and fight so valiantly against. Some of the forces are camouflaged; some of the forces are such because they don't realize the full impact of the proposals that they make. One of those, for example, which was made in the not too distant past was that instead of having veterans' medicine we should lump all of public medicine into one tremendous administrative and professional unit.

V 14
1951

Let me say to you in all sincerity, gentlemen, that when you have veterans' medicine and prison medicine and public medicine and medicine for all depressed classes molded into one single administrative unit, run by the United States Government, you are much further along the path of socialism than you may realize. We opposed it, in part because of our opposition to socialism. We shall continue to oppose it and hope thereby to render something of a service not only to ourselves and to our comrades but also to American medicine.

We are a scrapping organization. We have had many fights in the past. We have won most of them. We are glad to stand shoulder to shoulder with you in this scrap, and we promise any who may feel differently that this is a fight which you and we will win together for the benefit of the American people.

Report of Secretary and Action Thereon

The reference Committee on Reports of Board of Trustees and Secretary, to which the Report of the Secretary (see THE JOURNAL, Nov. 24, 1951, page 1241) was referred, approved this report and recommended "that fuller clarification of the present membership status be made and be given the widest possible circulation among the membership." The reference committee also expressed "admiration for and appreciation of the efficiency with which the Secretary has dealt with the many duties of his office throughout the year" and recorded its "gratefulness to him for the splendid cooperation which he has afforded them." The report of the reference committee was adopted.

Report of Board of Trustees

Dr. Dwight H. Murray, Chairman, presented the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1241-1273) which, with certain exceptions, was referred to the Reference Committee on Reports of Board of Trustees and Secretary.

REPORT OF REFERENCE COMMITTEE ON REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Your reference committee approves the report on public relations and desires to commend the Public Relations Conference just concluded, for the effectiveness and adequacy with which it advanced the interests of the Association in the field of public relations. It recommends that the proceedings of said conference be transmitted to all state medical associations for their information and guidance.

Your committee approves the report on the Woman's Auxiliary and wishes to record its conviction that the Woman's Auxiliary is an agency of great importance and assistance to the Association. In the critical year on which we are now entering, your committee feels that every encouragement and aid should be given to the Woman's Auxiliary on national and local levels, that thus it may more actively function and more efficiently achieve the ends of service to the interests of medicine which it so faithfully and so enthusiastically serves.

Your committee approves the report on "You and Your A. M. A." It regards this program as a very valuable and effective means of achieving, among the membership throughout the country, a more complete and sympathetic understanding of all the services and benefits conferred by the American Medical Association. It applauds the Board of Trustees and the Council on Medical Service for initiating this program and making it available for incorporation in programs at state levels. It strongly urges that all state associations take advantage of "You and Your A. M. A." and arrange to present it within their state boundaries for the information of their members and for the realization of the stronger unity and cooperation which it will inevitably generate.

Your committee approves the report on THE JOURNAL and the special journals. It is the opinion of the members of your committee that the American Medical Association may justly be proud of these publications and that it owes a debt of gratitude to all who labor in their preparation and publication. It is the particular desire of your committee to emphasize the fact that any member of the Association may, at choice, substitute any one of the special journals for THE JOURNAL and to urge that the members of the Association take advantage of this privilege in furtherance of their professional interests.

Your committee approves the report on *Today's Health*, which it regards as a very valuable means of bringing the accurate views and considered advice of outstanding and dependable medical authorities to the general public in terms that it can understand concerning matters in which it is vitally interested. Your committee is impressed with the fact, so clearly called to its attention by Dr. W. W. Bauer, the able editor of *Today's Health*, that the current operational deficit of the publication would be practically eliminated if every member of our Association would become a subscriber. Therefore, your committee earnestly urges every member to subscribe to *Today's Health* and to recommend it to patients as a dependable source of sound medical information.

Your committee approves the reports on the Standard Nomenclature of Diseases and Operations, the Quarterly Cumulative Index Medicus, the American Medical Directory, the Library, the State Journal Advertising Bureau, the Bureau of Investigation and the Bureau of Exhibits. Each of these is an important agency of service, and each deserves commendation for the quality of the service which it renders. Your committee notes with pleasure the increased activities of the Bureau of Medical Economic Research.

In the name of the House of Delegates and in its own behalf, your committee wishes to avail itself of this opportunity to thank the Board of Trustees for the diligence, assiduity and efficiency with which it regularly transacts the very complicated business with which it is called on to deal at the sacrifice of so much time and effort on the part of its members.

JOINT COMMISSION FOR THE ACCREDITATION OF HOSPITALS

The Speaker referred the report on the Joint Commission for the Accreditation of Hospitals in the Report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1242-1243) to the Reference Committe on Medical Education and Hospitals.

The report of the reference committee on this portion of the report of the Board of Trustees will be found in the report of the reference committee following the Report of the Council on Medical Education and Hospitals on page 1687.

REPORT OF COUNCIL ON RURAL HEALTH

The report of the Council (Committee) on Rural Health in the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1246-1247) was referred by the Speaker to the Reference Committee on Hygiene and Public Health.

REPORT OF REFERENCE COMMITTEE ON HYGIENE AND PUBLIC HEALTH

Dr. Charles L. Farrell, Chairman, presented the following report, which was adopted:

Your committee commends the Board of Trustees for its elevation of the Committee on Rural Health to the status of a council. Your committee had before it the report of the Council on Rural Health and commends the Council for its support of local health councils as channels for teaching health rules to the citizen and assumes that it is implicit in the thinking of the Council that the local health councils will support the establishment of, and will work through, official full time local health departments. Your reference committee also commends and strongly supports the report of the Council on Rural Health to the effect that health is more than medical care and that the individual has a responsibility not only to himself, but to his community, to promote a healthful environment. Your reference committee recommends the adoption of the report of the Council on Rural Health.

REPORT OF THE WASHINGTON OFFICE

The Speaker referred the report of the Washington Office in the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1247-1248) to the Reference Committee on Legislation and Public Relations.

REPORT OF REFERENCE COMMITTEE ON LEGISLATION AND PUBLIC RELATIONS

Dr. R. B. Robins, Chairman, presented the following report, which was adopted:

Reports of the Washington Office, the Committee on Legislation (see THE JOURNAL, Nov. 24, 1951, page 1249) and the Com-

mittee on Medicolegal Problems (see THE JOURNAL, Nov. 24, 1951, pages 1249-1250): Your committee approves these reports as written and recommends their adoption. It commends the Washington Office and the committees for their splendid work and reports.

REPORTS OF COUNCIL ON PHARMACY AND CHEMISTRY, THE LABORATORIES, COMMITTEE ON COSMETICS, COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION, COUNCIL ON FOODS AND NUTRITION AND BUREAU OF HEALTH EDUCATION

The Speaker referred to the Reference Committee on Hygiene and Public Health portions of the Report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1250-1256 and 1264-1267) as follows: Report of the Council on Pharmacy and Chemistry, Report of the Laboratories, Report of the Committee on Cosmetics, Report of the Council on Physical Medicine and Rehabilitation, Report of the Council on Foods and Nutrition and report of the Bureau of Health Education.

REPORT OF THE REFERENCE COMMITTEE ON HYGIENE AND PUBLIC HEALTH

Dr. Charles L. Farrell, Chairman, presented the following report, which was adopted section by section and as a whole:

Your committee had before it the report of the Council on Pharmacy and Chemistry. It directs your attention with commendation to the fact that the acceptance of products has been materially expedited in recent years. With the rapid advancement of chemotherapy, the annual publication of "New and Non-Official Remedies" is worthy of special commendation. Your reference committee recommends the adoption of the report of the Council on Pharmacy and Chemistry.

Your reference committee received the report of the Laboratories. The report is excellent and we recommend its approval.

Your committee received the report of the Committee on Cosmetics and believes the committee deserves special commendation for its activities and accomplishments in this highly important field. Adoption of the report is recommended.

Your committee reviewed the report of the Council on Physical Medicine and Rehabilitation and notes with regret the death of two members, and shares with the Council its sense of loss. Your committee notes with interest the activity of this highly important Council during the past year, and recommends the adoption of the report.

Your reference committee reviewed the report of the Council on Foods and Nutrition and heartily approves the report. It notes with interest the activity of the Council regarding legislation affecting food additives. It recognizes the difficulties inherent in this problem and endorses the action of the Council in supporting the principle of H. R. 3257. Your committee recommends the adoption of the report.

Your reference committee considered the multi-faceted report of the Bureau of Health Education and notes with interest and gratification the varied activities and progress of this Bureau. The Bureau deserves continued support for its excellent work. The committee notes with pleasure that *Today's Health* has grown in stature and importance, and recommends that every doctor keep it in his waiting room. In consideration of the basic responsibility of state health departments for promulgating measures for the health protection of their citizens, your committee recommends the addition of the Association of State and Territorial Health Officers to the list of organizations whose joint opinion as to the appropriate age at which the various immunizations should be administered is proposed to be secured by the National Congress of Parents and Teachers Advisory Committee on Health and Summer Round-Up in cooperation with the Bureau of Health Education. Your committee recommends the adoption of the report as amended.

REPORT OF COUNCIL ON INDUSTRIAL HEALTH

The report of the Council on Industrial Health in the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1256-1258) was referred by the Speaker to the Reference Committee on Industrial Health.

REPORT OF REFERENCE COMMITTEE ON INDUSTRIAL HEALTH

Dr. Millard D. Hill, Chairman, presented the following report, which was adopted:

Your committee was impressed with the wide range of activities engaged in by the Council on Industrial Health and with the importance of certain services as they relate to defense industry. The recently prepared reports on integration of industrial medical services with community civil defense and on industrial manpower conservation met important current needs and should, in our opinion, be widely distributed to industrial management, the medical profession and official agencies dealing with federal contracts for defense material.

The committee strongly approves of the annual conference between representatives of the state medical association committees on industrial health and the Council at the time of the Annual Congress on Industrial Health. These meetings, together with the field services and the distribution of news letters, should promote the development of local industrial health services along approved lines. Your committee particularly commends the joint program of education being developed between the Council and the American Academy of General Practice.

Especial attention was paid to the proposed "Essentials of Medical Nursing Services in Industry." In the opinion of your committee this statement fills a long-felt want and should go far to define and protect the status of industrial nurses, particularly those without direct medical supervision. The committee recommends that the Council forward its work with the nurses and industrial physicians to the end that these principles receive wide distribution and acceptance.

In many of its activities the Council on Industrial Health has found it necessary and desirable to seek consultation in special fields dealing with noise, the older worker, chronic illness, human relations, workmen's compensation, atmospheric pollution, environmental hygiene and rehabilitation. The committee recommends the need to maintain medical interest and leadership in these fields involving as they do contacts and liaison with representative groups in the profession of engineering, hygiene, sociology and psychiatry.

The committee also endorses the efforts to elevate standards of graduate training now being worked out with professional schools and standardizing agencies.

REPORT OF COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

The Speaker referred the report of the Council on National Emergency Medical Service in the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1259-1260) to the Reference Committee on Medical Military Affairs.

REPORT OF REFERENCE COMMITTEE ON MEDICAL MILITARY AFFAIRS

Dr. Homer L. Pearson Jr., Chairman, presented the following report, which was adopted:

The Reference Committee on Medical Military Affairs had for consideration the report of the Council on National Emergency Medical Service. All members of the committee were present together with the consultants from the military services. Also present were the Chairman and Secretary of the Council on National Emergency Medical Service, some members of the Board of Trustees and others interested in matters before the committee. All entered freely into the discussions.

The report of the Council on National Emergency Medical Service was thoroughly studied and discussed. Your committee commends the Council on the fine work it is doing in military and selective service activities, strongly supports the continuation of the policy of deferment of properly qualified pre-professional and professional students of medicine, dentistry and veterinary medicine and recommends that the Board of Trustees and Council make recommendations to this effect to the appropriate agencies.

Discussion of that portion of the report dealing with civil defense brought out that the nation as a whole was some years behind in its overall program for civil defense and your committee looks on this with some concern. It is therefore recom-

V 14
1951

mended by this committee that representations be made by the Council and the Board of Trustees to appropriate agencies of government that there be closer participation on the part of the military services in civil defense planning.

Your committee notes the cordial appreciation expressed by the Surgeons General for the vastly improved relationships between the military medical services, the various advisory committees and the Council on National Emergency Medical Service of the American Medical Association and recommends that this activity be continued and further enlarged.

REPORT OF BUREAU OF LEGAL MEDICINE AND LEGISLATION

The report of the Bureau of Legal Medicine and Legislation in the report of the Board of Trustees (see THE JOURNAL, Nov. 24, 1951, pages 1260-1264) was referred by the Speaker to the Reference Committee on Legislation and Public Relations.

REPORT OF REFERENCE COMMITTEE ON LEGISLATION AND PUBLIC RELATIONS

Dr. R. B. Robins, Chairman, presented the following report, which was adopted:

Report of the Bureau of Legal Medicine and Legislation: Your committee approves this report and recommends its adoption. The fine work of the Bureau is noted with appreciation.

REPORT OF ASSISTANT TO THE GENERAL MANAGER, DEPARTMENT OF PUBLIC RELATIONS

The Speaker referred the report of the Assistant to the General Manager, Department of Public Relations (see THE JOURNAL, Nov. 24, 1951, pages 1271-1272) to the Reference Committee on Legislation and Public Relations.

REPORT OF REFERENCE COMMITTEE ON LEGISLATION AND PUBLIC RELATIONS

Dr. R. B. Robins, Chairman, presented the following report, which was adopted:

Report of the Assistant to the General Manager and Department of Public Relations: Your committee approves this report with special commendation and recommends its adoption.

Supplementary Report of the Board of Trustees

Dr. Dwight H. Murray, Chairman, presented the supplementary report of the Board of Trustees, the portions of which the Speaker referred to reference committees as follows: Joint Commission for Accreditation of Hospitals and Relation of Physicians and Hospitals to the Reference Committee on Medical Education and Hospitals; Resolution on Distribution of Medical Care to the Reference Committee on Insurance and Medical Service; Poisonous Household Products to the Reference Committee on Hygiene and Public Health; Funds for Medical Research and Resolution on Costs of All Technical and Professional Training to the Reference Committee on Miscellaneous Business, and Resolution on Publicizing American Medicine to the Reference Committee on Legislation and Public Relations. The Speaker delayed referral of the portion on the Coordinating Committee until the full report of that committee was received, and declared that the item on the Resolution on Free Choice of Physicians for Federal Employees was informative and did not require action or referral.

Joint Commission for the Accreditation of Hospitals: The Board of Trustees wishes to report that the following physicians have been selected to represent the American Medical Association on the Joint Commission for the Accreditation of Hospitals:

Dr. Gunnar Gundersen and Dr. Stanley Truman for terms of three years.

Dr. Dwight H. Murray and Dr. Herman G. Weiskotten for terms of two years.

Dr. Rolland J. Whitacre and Dr. Julian P. Price for terms of one year.

The report of the Reference Committee on Medical Education and Hospitals, to which this portion of the supplementary report of the Board of Trustees was referred, will be found in the reference committee report following the report of the Council on Medical Education and Hospitals on the same subject on page 1687.

Resolution on Distribution of Medical Care: In accordance with the directive of the House of Delegates at its meeting in June 1951, the Board of Trustees referred to the Committee to Study the Twelve Point Program the resolution on distribution of medical care introduced by Dr. William F. Costello of New Jersey. The committee submitted the following report, which is being transmitted to the House of Delegates with the approval of the Board of Trustees:

The Committee to Study the Twelve Point Program met in New York City on Oct. 27, 1951, for the purpose of holding a hearing on the New Jersey resolution, at which representatives from the medical societies of New Jersey, New York and North Carolina were present.

The committee was impressed by the energy and devotion with which the New Jersey society had been attempting to solve some of the difficult problems of medical care. After much discussion of the several proposals contained in the resolution, the fields of disagreement were mentioned, i. e.: (a) That the American Medical Association limit its support to the non-profit medical service plans; (b) that the government, at every level, should promote a program of medical care protection for its own employees by assuming a part or all of the cost of enrolment in voluntary non-profit payment plans; (c) that consideration be given to providing an overall inclusive service for non-chronic conditions and with no income limitations; (d) that the government should purchase policies in non-profit medical service agencies for the care of the medically indigent not on relief rolls; (e) that the possibility of securing the assignment of U. S. Public Health Service physicians in sparsely settled areas or to other areas not properly served by physicians be explored; (f) that the American Medical Association support a program of government subsidy where needed to assist qualified individuals in obtaining professional training, and to expand professional training facilities either by addition to existing schools or the establishment of new schools.

The Committee to Study the Twelve Point Program finds itself unable, therefore, to endorse the New Jersey proposals as now written and recommends that amended proposals be submitted by the New Jersey delegates to the House of Delegates of the American Medical Association for future consideration and action by the House of Delegates.

REPORT OF REFERENCE COMMITTEE ON INSURANCE AND MEDICAL SERVICE

Dr. Raymond M. McKeown, Chairman, presented the following report, which was adopted:

The supplementary report of the Board of Trustees dealing with the cooperative studies now in process between the Medical Society of New Jersey and the special cooperating study committee established by the Trustees goes far to reaffirm our confidence in cooperative effort. The committee established by the Board of Trustees to study the Twelve Point Program presented by New Jersey reported itself unable to endorse the New Jersey proposals as now written and recommended that amended proposals as approved by the New Jersey house of delegates be submitted to the House of Delegates of the American Medical Association in the future for consideration and action. The subject was ably presented by Dr. Hamilton of the Board of Trustees as well as Dr. W. F. Costello of New Jersey.

Your committee, after due consideration, approves the supplementary report of the Board of Trustees dealing with the New Jersey proposals with corrections as requested.

Poisonous Household Products: In view of the fact that infants and small children may suffer serious injury or death from accidental ingestion of such commonly used household articles as carbon tetrachloride dry cleaning fluid, methyl salicylate (oil of wintergreen) and silver polishes containing cyanide, all of which, though poisonous, are not labeled as such, and that new cleaning products and other household preparations are being placed on the market each year, some of which may be poisonous and yet not be so labeled because they do not fall under the Federal Caustic Poisons Act, the Board of Trustees is planning to take appropriate steps to warn the public, and parents of young children in particular, of the dangerous nature of household products known to be poisonous but not so labeled, by publishing such information in *Today's Health* and in other publications and pamphlets of the Association and to conduct a

survey of deaths of small children and infants resulting from ingestion of household products not labeled as poisonous. The Board of Trustees reports this matter to the House of Delegates and requests the concurrence of the House in the development of this project.

Report of Reference Committee on Hygiene and Public Health

Dr. Charles L. Farrell, Chairman, presented the following report, which was adopted:

Your reference committee strongly endorses the supplementary report of the Board of Trustees on Poisonous Household Products and recommends concurrence.

Relation of Physicians and Hospitals: After exhaustive study and careful consideration of the several reports previously rendered relative to the relation of physicians and hospitals, the Board is submitting for consideration of the House of Delegates a substitute report, as follows:

Relation of Physicians and Hospitals

On June 9, 1949 the House of Delegates approved a Report of the Committee on Hospitals and the Practice of Medicine as revised by the reference committee; in December, 1949 the House by motion reaffirmed the principles of such report but re-referred it to the original committee for revision; in June, 1950 the House of Delegates approved, as amended by the reference committee, the further report of the Committee on Hospitals and the Practice of Medicine and in December, 1950 an Addendum to such report recommended by the Judicial Council.

The Board of Trustees has had these reports under study for the past year and is of the opinion that they need clarification. Accordingly, the Board of Trustees recommends that there be substituted for all those reports referred to in the first paragraph hereof the following statement to be known as:

Guides for Conduct of Physicians in Relationships with Institutions

So far as it can be determined on the basis of study made by the Bureau of Legal Medicine and Legislation of the American Medical Association, as a matter of law the corporate practice of medicine is illegal in most states. In almost all instances the classic example given by the courts of the type of corporate practice of a profession that is illegal is the instance in which a corporation hires a professional man and then sells his services to the public on a fee basis for the profit of the corporation. Such exceptions as there are refer to statutory legislation in several states permitting certain modifications of this general law. It must also be remembered that fee splitting with a corporation is just as unethical as fee splitting with another physician.

In addition to being guided by the laws of the various states, physicians in their relationships with hospitals must be guided by the Principles of Medical Ethics of the American Medical Association. Those sections of the Principles which have a distinct bearing on these relationships are as follows:

Chapter I, Sec. 3. "Groups and Clinics.—The ethical principles actuating and governing a group or clinic are exactly the same as those applicable to the individual. As a group or clinic is composed of individual physicians, each of whom, whether employer, employee or partner, is subject to the principles of ethics herein elaborated, the uniting into a business or professional organization does not relieve them either individually or as a group from the obligation they assume when entering the profession."

Chapter III. Article VI. Sec. 2. "Conditions of Medical Practice.—A physician should not dispose of his service under conditions that make it impossible to render adequate service to his patients, except under circumstances in which the patients concerned might be deprived of immediately necessary care."

Chapter III. Article VI. Sec. 3. "Contract Practice.—Contract practice as applied to medicine means the practice of medicine under an agreement between a physician or a group of physicians, as principals or agents, and a corporation, organization, political subdivision or individual, whereby partial or full medical services are provided for a group or class of individuals on the basis of a fee schedule, or for a salary or for a fixed rate per capita.

"Contract practice *per se* is not unethical. Contract practice is unethical if it permits of features or conditions that are declared unethical in these Principles of Medical Ethics or if the contract or any of its provisions causes deterioration of the quality of the medical services rendered."

Chapter III. Article VI. Sec. 6. "Purveyal of Medical Service.—A physician should not dispose of his professional attainments or services to any hospital, lay body, organization, group or individual, by whatever name called, or however organized, under terms or conditions which permit exploitation of the services of the physician for the financial profit of the agency concerned. Such a procedure is beneath the dignity of professional practice and is harmful alike to the profession of medicine and the welfare of the people."

In conclusion, the Principles of Medical Ethics states: "These principles of medical ethics have been and are set down primarily for the good of the public and should be observed in such a manner as shall merit and receive the endorsement of the community . . ."

The duties of the Judicial Council are specified in the Constitution and By-Laws and among those duties the following is prescribed:

"The Council shall have jurisdiction on all questions of medical ethics and the interpretation of the laws of the Association.

"The Council at its discretion may investigate general professional conditions and all matters pertaining to the relations of physicians to one another and to the public, and may make such recommendations to the House of Delegates or the constituent associations as it deems necessary.

"The Council shall have authority to request the President to appoint investigating juries to which it may refer complaints or evidence of unethical conduct which in its judgment are of greater than local concern. Such investigating juries, if probable cause for action be shown, shall submit formal charges to the President, who shall appoint a prosecutor to prosecute such charges against the accused before the Judicial Council in the name and on behalf of the American Medical Association. The Council may acquit, admonish, suspend or expel the accused."

The primary obligation of both physicians and hospitals is to serve the best interest of the patients. The decision as to the ethical or unethical nature of practice must be based on the ultimate effect for good or ill on the public as a whole. All of the various questions involved in the relationship between physicians and hospitals, both legal and ethical, particularly questions dependent on local conditions, must be considered in the first instance at the local level because of the various differences which of necessity exist in the many sections of the country.

One of the factors that have aggravated physician-hospital relationship is the inclusion of medical services in the contracts of voluntary hospital service plans. The medical profession is fostering voluntary health insurance, and we believe that nothing should be done to disturb this very important and essential program. However, the American Medical Association has reaffirmed many times through its then Bureau of Medical Economics, its Judicial Council and the House of Delegates the principle that hospital service plans should exclude all medical services, and the contract provisions of such plans should be limited exclusively to hospital services. At the same time, so that there would be no misunderstanding as to which services should or should not be included, the House of Delegates has stated that ". . . if hospital service is limited to include only hospital room accommodations, such as bed, board, operating room, medicine, surgical dressings and general nursing care, the distinction between hospital service and medical service will be clear." (Proceedings of the San Francisco Session of the House of Delegates, 1938, p. 31.) Past actions of the House of Delegates give every reason to reiterate that radiology, anesthesiology, pathology and physiatry constitute the practice of medicine.

In order to initiate a method for remedying this situation, it is recommended that Blue Shield and Blue Cross be requested to cooperate to the extent of writing all new contracts in such a manner that Blue Shield will cover insurable medical services and Blue Cross will cover insurable hospital services. It is hoped that the professional and hospital authorities and the voluntary prepayment plans will cooperate in furthering these recommendations.

Since the physician and hospital are interdependent, it is incumbent on both to be interested in all phases of their scientific and financial relationships. This means that the professional staff of the hospital has very definite responsibilities toward not only other members of the professional staff, whether active or courtesy, but also toward hospital management. The recommendations of the staff concerning medical matters are usually accepted by the management of the hospital through its board of managers or trustees. It must also be remembered that to be approved for residencies in specialties by the American Medical Association and the American College of Surgeons, certain requirements are mandatory to the institution, among them adequate pathologic and radiologic coverage. As a rule, the staff of a hospital elects an executive committee or works under an appointed executive committee to advise the lay officers of the institution on purely professional matters, and recommends who may or

V 14
1951

may not use the institution for professional work. Unfortunately, in many instances, the financial problems of the lay hospital management have been no affair of the staff or of its professional executive committee. This is wrong and probably the cause of most of the differences of opinion between physicians and hospital management. The financial problems of an institution in which a physician does his professional work are definitely of importance to him and to the professional staff, and the proper consideration must be given to these problems if the hospital is to work efficiently and remain the workshop of the physician, and without proper facilities the services rendered to the public are in jeopardy and these public services are the all-important function of both hospital and staff.

Every professional man on the appointed staff should have a voice in the professional management of the institution. The pathologist, roentgenologist, anesthesiologist and physiatrist, as well as the other professional staff members, should have equal standing as active members of the staff with all the rights and privileges pertaining to other members of the staff of equal standing. The chiefs of these departments should be nominated and appointed in the same manner as are the chiefs of other major departments in the same hospital.

The revised Principles of Medical Ethics has been written with all of these various factors in mind and is broad enough to cover all possible ethical physician-hospital relationships. The Constitution and By-Laws of the American Medical Association distinctly covers methods of procedure for all persons who have a complaint so that they may approach the Judicial Council. The functions of that Council are specifically delineated.

"In the event of a controversy between physician and physician, or physician and hospital management, on these problems, it is recommended that, since local conditions must be taken into consideration, these problems be resolved insofar as possible at the local level.

"There can be no exploitation of the doctor or of the hospital if everyone concerned in management and on the professional staff will work together to supply the greatest possible good quality medical and hospital services to the public. In any given controversy, every effort should first be made to settle the matter at the staff-management level. In case of failure to settle the controversy at this level, assistance of the county medical society should be requested. If, then, it cannot be resolved it should be submitted to a committee of the state medical association for advice and recommendation. If problems cannot be solved at the staff-management level, through the county medical society, or through the state medical association, the Constitution and By-Laws of the American Medical Association provides that ". . . the (Judicial) Council, at its discretion, may investigate general professional conditions and all matters pertaining to the relations of physicians to one another and to the public, and may make such recommendations to the House of Delegates or the constituent associations as it deems necessary."

To implement the settlement of such controversies, it is recommended that each component medical society and each constituent state and territorial medical association appoint a Committee on Hospital and Professional Relations. This committee should be available to receive complaints from any physician, hospital, medical organization, or any other interested person or group with reference to professional or economic relations existing between doctors of medicine and hospitals. On receipt of such complaint by such a committee the matter should be investigated and acted on in such manner as will best effect adjustment of the complaint.

Another approach that should not be neglected in activating this report is that of the local and state hospital associations. Most of the states and many communities have hospital associations providing direct representation for the hospitals within their areas. It seems reasonable to assume that state medical associations and component county medical societies could well effect liaison with these organizations in the settlement of problems involving physician relationships.

In summary, the following general principles are suggested to individual physicians, county medical societies, and state medical associations as a basis for adjusting controversies, these principles, however, to be qualified to the extent required by the applicability of one or more of the factors heretofore mentioned:

1. A physician should not dispose of his professional attainments or services to any hospital, corporation or lay body by whatever name called or however organized under terms or conditions which permit the sale of the services of that physician by such agency for a fee.

2. Where a hospital is not selling the services of a physician, the financial arrangement if any between the hospital and the physician properly may be placed on any mutually satisfactory basis. This refers to the remuneration of a physician for teaching or research or charitable services or the like. Corporations or other lay bodies properly may provide such services and employ or otherwise engage doctors for those purposes.

3. The practice of anesthesiology, pathology, physical medicine and radiology are an integral part of the practice of medicine in the same category as the practice of surgery, internal medicine or any other designated field of medicine.

Report of Reference Committee on Medical Education and Hospitals

Dr. Joseph D. McCarthy, Chairman, presented the following report, which was adopted:

The report of the Hess Committee has been before the House of Delegates, the Board of Trustees and the Council on Medical Service from time to time. It is the hope of your reference committee that finally the American Medical Association has a draft which will be acceptable to all concerned. Your committee recognizes that all the members of the House have not had the opportunity to read the Board of Trustees' revised report inasmuch as up to this morning it was not available. This report should be read in toto because of its import. Only in this way will the members of the House have full knowledge of its contents, important to each of you, yes, but much more important that all be able to pass along to their confreres the exact intent.

In the opinion of your committee, the members of the American Medical Association, medical schools, the American Hospital Association, the hospital boards controlling hospital directives now have a code of principles which should be a guiding light for physician-hospital relations. After all, amicable relationships of this character can be settled at the local level in the great majority of instances. Should this be impossible, physicians do have channels up to the Judicial Council of the American Medical Association through which the disagreement may be funneled. Modes of procedure so cited are forgotten and thereby too often the issue is forgotten or lost by default.

For your information there were no objections to the adoption of this pronouncement by members of the American Medical Association attending the reference committee hearing.

Your committee unanimously approves this revised pronouncement of the Board of Trustees, suggests that the principles in the future be referred to as "Relation of Physicians and Hospitals" and that the House of Delegates commend the Board for its arduous study and constructive recommendations relative to the revised "Code."

Funds for Medical Research: Surveys of the sources of money for medical research which have been conducted to date have given only a partial picture of the funds available, have concentrated primarily on governmental grants and have ignored, for the most part, contributions of free time by scientists and gifts of private individuals. Many scientists are alarmed at the lack of funds for free research, that is, funds for scientific research not connected with any particular disease such as cancer, multiple sclerosis and so forth. This lack needs to be pointed up if it indeed exists. Data uncovered by a comprehensive survey of all time and money being given for medical research would provide valuable guidance to philanthropic institutions and individuals in the most useful giving of funds for medical research.

In view of these facts, the Board of Trustees through its Committee on Research plans to conduct a preliminary survey of (1) the sources of funds, both public and private, now available for medical research; (2) the amount of free time being donated to medical research, and (3) the fields of medical research receiving funds and in what proportion.

The Board reports this matter to the House of Delegates and requests concurrence in this project.

Report of Reference Committee on Miscellaneous Business

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

Your committee heartily concurs in the recommendation of the Board of Trustees relative to this matter and recommends its approval.

Coordinating Committee: Dr. Elmer L. Henderson, Chairman of the Coordinating Committee for the National Education Campaign, submitted a report from his Committee to the Board of Trustees on December 3. This report was approved by the Board of Trustees and Dr. Henderson has been requested to present it to the House of Delegates.

The Board of Trustees voted to continue for another year the present Coordinating Committee, with the addition of Dr. John W. Cline, President of the American Medical Association, as a member.

The report of the Reference Committee on Legislation and Public Relations on this portion of the supplementary report of the Board of Trustees will be found following the Report of the Coordinating Committee on page 1693.

Resolution on Free Choice of Physicians for Federal Employees: With reference to the Resolution on Free Choice of Physicians for Federal Employees, which was adopted by the House of Delegates in June, 1949, the Board of Trustees wishes to report that several meetings have been held between Dr. J. Stanley Kenney of New York, who introduced the resolution, and representatives of the Association's Council on Industrial Health and of the New York Employees' Compensation Commission. After much discussion, it was agreed by all those who participated in the conferences that to press for the principle involved, by the approach mentioned in the resolution, would be unwise, and it was recommended that no action be taken at this time for the accomplishment of the resolution.

Resolutions on Publicizing American Medicine: In accordance with the Resolutions on Publicizing American Medicine, introduced by Dr. Edward P. Flood of New York in June 1951, the Department of Public Relations, to which the resolutions were referred, has prepared 26 slogans which are available to physicians for use in advertising space purchased in journals, annuals and programs of educational, welfare, religious and eleemosynary groups. The headquarters office will be glad to supply these slogans on request.

Report of Reference Committee on Legislation and Public Relations

Dr. R. B. Robins, Chairman, presented the following report, which was adopted:

Resolutions on Publicizing American Medicine: Your reference committee approves these resolutions and recommends their adoption.

Resolution on Costs of all Technical and Professional Training: In Atlantic City in June 1951 Dr. E. F. Hoffman of California presented a resolution relative to the amortization for federal income tax purposes of the costs of all technical and professional training. This resolution was submitted to the Bureau of Legal Medicine and Legislation and the Council on Medical Education and Hospitals, and the attached memorandum has been furnished the Board of Trustees by the Director of the Bureau of Legal Medicine and Legislation. It is submitted to the House of Delegates for such consideration as it may think necessary in the premises.

There was referred for comment to the Council on Medical Education and Hospitals and to the Bureau of Legal Medicine and Legislation by the Executive Committee of the Board of Trustees a resolution presented to the House of Delegates at the Atlantic City, 1951, meeting by Dr. E. F. Hoffman of California relative to the amortization for federal income tax purposes of "the costs of all technical and professional training." The resolution calls attention to the fact that business concerns may annually depreciate capital assets for income tax purposes and purposes in effect that the cost of professional education received by physicians and others in a like category be considered a capital asset to be amortized for tax purposes.

Only one question was submitted to the Council and to the Bureau for comment, namely, "whether the establishment for tax purposes, of the costs of all technical and professional training is practical and whether such information will be available." The Bureau has no information on which to base an answer to this question but the Council, through its Secretary, Dr. Anderson, feels that it would not be too difficult to establish the costs of a medical education at least by recent graduates. Tuition costs could readily be determined as well as the costs of books and equipment. The cost of housing and meals could likewise be determined but there may be some question as to whether expenditures of this sort would be taken into consideration in determining the total amount to be amortized. The same question may also be raised with respect to traveling expenses incurred in attending school. The major portion of the costs of a medical education, however, may be ascertained without too much difficulty.

Quite aside from the question of the determination of costs, there are other aspects of the matter that should be considered. In order to justify support of the proposal embodied in the resolution, its benefits would have to be limited to those taxpayers who themselves paid for their medical education. It would seem rather indefensible to suggest that a taxpayer be permitted to amortize for tax purposes the costs of a medical education when someone else paid for that education, such as the father of the taxpayer. Furthermore, business concerns are permitted to depreciate capital assets to offset deterioration and obsolescence. It will be somewhat difficult to draw an analogy between that procedure and the one proposed in the resolution, for even though a medical education may deteriorate it would be impossible to fix any rate of depreciation or to evaluate it in terms of money.

The House of Delegates is already committed to the proposition that the costs of postgraduate study should be deductible for federal income tax purposes and an application has been filed with the Office of the Commissioner of Internal Revenue as an initial step to effectuate the House action. This application is based, in part, on the contention that such expenses are incurred to keep up to date a physician's "stock-in-trade" or, in other words, to prevent deterioration. It would seem to be inconsistent to argue that the cost of medical education should be amortized on the hypothesis that such education is a capital asset and at the same time contend that the expenses of postgraduate education are an ordinary and necessary business expense and not costs in obtaining a capital asset. The two positions would be somewhat difficult to harmonize.

Report of Reference Committee on Miscellaneous Business

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

The Resolution on the Costs of all Technical and Professional Training, originally introduced in Atlantic City in June 1951, was submitted to the Bureau of Legal Medicine and Legislation and the Council on Medical Education and Hospitals. The statement was made that the accomplishment of the resolution was impractical and unobtainable. The report by the Bureau of Legal Medicine and Legislation was approved by your reference committeee, and it recommends approval of the report.

Report of the Judicial Council

Dr. Edward R. Cunniffe, Chairman, presented the following report of the Judicial Council, which was referred by the Speaker to the Reference Committee on Miscellaneous Business:

To the Members of the House of Delegates of the American Medical Association:

This report covers the work done by the Judicial Council since the midwinter meeting, which was held in conjunction with the House of Delegates session in Cleveland in December 1950. There was a subsequent meeting held on April 19, 1951 and a third held in conjunction with the annual session of the House of Delegates in Atlantic City in June. At that session a short report was made on matters referred from the meeting held the previous December in Cleveland. There were two meetings of the Judicial Council at that time. The fourth meeting of the Council was held in Chicago on Oct. 9, 1951. At these meetings the usual routine business was transacted which consisted of an examination of those applying for Fellowship whose eligibility was questioned, the recommendation of candidates for Affiliate Fellowship, and the consideration of many requests for decisions and opinions concerning the ethics of practices which were either already followed or were contemplated by the writers. A great majority of these queries were answered by the Chairman, who expressed his personal opinion with the assurance that the decision of the entire Council would be forthcoming. At the fifth meeting, held in Los Angeles on December 2, the Council heard an appeal from the decision of a constituent state medical association. A second meeting, on December 3, was concerned entirely with routine business such as outlined above.

ENTERTAINMENT EXPENSES

The Judicial Council has been asked to express its opinion with respect to the ethical aspects of expenditures made by physicians for the entertainment of other physicians. The Council does not consider such expenditures as *per se* unethical. There are circumstances under which a professional obligation may rest on a physician to entertain other physicians. It is a usual and necessary concomitant of the practice of medicine. It is certainly not an uncommon practice and is recognized by the profession generally as entirely proper and justifiable.

The opinion of the Council was requested on this matter because governmental tax authorities in several jurisdictions have

V 14
1951

questioned the right of physicians to deduct entertainment expenses for income tax purposes, contending that such expenditures are unethical. The Council is informed that the deductibility of similar expenditures has been permitted where the taxpayer is a lawyer. The Council knows of no reason why a different ruling should apply when the taxpayer is a physician.

The Council expresses no opinion with respect to the legal aspects of the question but does wish to recall to the attention of the House of Delegates a statement that was published in THE JOURNAL for Feb. 3, 1951, beginning on page 323, which was prepared by the Bureau of Legal Medicine and Legislation and dealt with the physician's Federal income tax. In that statement appears references to instances in which the deductibility of expenses incurred for entertainment purposes has been permitted when such expenses were incurred by an actor and by a lawyer. The Bureau of Legal Medicine and Legislation is receiving an increasing number of inquiries from physicians whose deductions of entertainment expenses have been questioned. This clarifying statement by the Council may be of much help to these physicians.

DEPENDENCE OF PHYSICIANS ON EACH OTHER

Sections 1 and 2 of Article II, Chapter III of the Principles of Medical Ethics, entitled Professional Services of Physicians to Each Other, read as follows:

"Dependence of Physicians on Each Other. Section 1.—As a general rule, a physician should not attempt to treat members of his family or himself. Consequently, a physician should cheerfully and without recompense give his professional services to physicians or their dependents if they are in his vicinity.

"Compensation for Expenses. Sec. 2.—When a physician from a distance is called to advise another physician about his own illness or about that of one of his family dependents, and the physician to whom the service is rendered is in easy financial circumstances, a compensation that will at least meet the traveling expenses of the visiting physician should be proffered him. When such a service requires an absence from the accustomed field of professional work of the visitor that might reasonably be expected to entail a pecuniary loss, such loss may, in part at least, be provided for in the compensation offered."

If a physician or his dependents have insurance providing benefits for medical or surgical care, then in the opinion of the Judicial Council a physician who renders such service may accept the insurance benefits without violating the provisions of Chapter III, Article II, Sections 1 and 2 of the Principles of Medical Ethics above quoted.

APPPEAL PROCEDURE

The Council would like to emphasize the details of the procedure to be followed in effecting appeals authorized under Chapter X, Section 4 (I) of the By-Laws. This emphasis is thought to be advisable at this time in order that delays in consideration of appeal cases be reduced to a minimum. The attention of members is redirected to the fact that in considering cases properly appealable, the Council may consider only questions of law and procedure, not of fact. Before the Council may assume jurisdiction of a case, evidence must be submitted that the aggrieved member has exhausted all procedures available to him under the provisions of the constitutions and by-laws of the component and constituent associations of which he is a member. In effecting an appeal, the aggrieved member must file with the Chairman of the Council six copies of an appeal statement, or brief, setting forth clearly the basis advanced by the member as his reason why the Council should assume jurisdiction and take action. A copy of this statement or brief must be forwarded at the same time to the appropriate officer of the constituent association from the decision of which the appeal is taken. The present By-Laws provide that an appeal can be taken at any time within six months "immediately following the date of decision by the constituted authority of a constituent association." The Council feels that it would serve to expedite appeal procedure if the By-Laws were amended to require that the appeal be effected within a period of sixty days rather than six months. The Council also feels that justice will be better served if, on an appeal being perfected, the decision of the constituent association were stayed pending the final decision of the Council. The Council hopes to have published in THE JOURNAL in an early issue a detailed statement relative to procedures to be followed in appeals to the Council.

DR. JOHN H. O'SHEA

It is again our sad duty to report the death of a former member of the Council. Dr. John H. O'Shea of Spokane, Wash., was elected to the Judicial Council in 1933 and served continuously until 1948 when he suffered a cerebral accident. Until his illness he was constant in his attendance at our meetings. Realizing that he would never be able to resume his active work, he resigned from the Council in 1949. Dr. O'Shea was always intensely interested in the work of the Council and faithful in discharging all of his duties. His long service gave him a valuable insight into the principles of ethics, the laws of our Association and its many traditions. He was a man of substance, fine character and high ideals. Dr. O'Shea brought to the deliberations of the Council an atmosphere of the forward characteristics of the great northwest section of our country. He was charitable in his judgment but never compromised with willful wrong-doing. In his long service he contributed greatly to the work of the Council and in his passing our members feel a great sense of personal loss.

Respectfully submitted,

EDWARD R. CUNNIFFE, Chairman.
H. L. PEARSON JR.
J. B. LUKINS.
LOUIS A. BUIE.
WALTER F. DONALDSON.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

Your reference committee notes with approval the accomplishments of the Judicial Council and commends its members for their effort. The report was discussed and considered favorably. Your reference committee recommends approval of the sections of the report entitled Entertainment Expenses and Dependence of Physicians on Each Other. Your committee concurs in the recommendations of the Judicial Council with reference to Appeal Procedure and further recommends that this portion of the report be referred to the Committee on Constitution and By-Laws for implementation. Your reference commmittee notes with extreme satisfaction the dignified memorial to Dr. John H. O'Shea and heartily concurs in the sentiments expressed. It recommends approval.

The Vice Speaker stated that, in accordance with the recommendation of the reference committee, the portion of the report of the Judicial Council dealing with Appeal Procedure was referred to the standing Committee on Constitution and By-Laws.

Report and Supplementary Report of Council on Medical Education and Hospitals

Dr. H. G. Weiskotten, Chairman, presented the report of the Council on Medical Education and Hospitals (see THE JOURNAL, Nov. 24, 1951, pages 1273-1278) and a mimeographed supplementary report which dealt exclusively with the Revised Essentials of an Acceptable Medical School. (Because of limitation of available space, the supplementary report is not submitted herewith; copies will be ready for distribution within a short time.) The report and supplementary report of the Council were referred to the Reference Committee on Medical Education and Hospitals.

REPORT OF REFERENCE COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

Dr. Joseph D. McCarthy, Chairman, submitted the following report, which was adopted section by section and as a whole, as amended:

Accreditation of Hospitals: A portion of the report of the Board of Trustees was assigned to your reference committee, it having to do with a report on the Joint Commission for the Accreditation of Hospitals. In order that this subject may be considered in toto by the House of Delegates at this time, your committee will combine the Board's recommendations along with that portion of the report of the Council on Medical Education and Hospitals entitled "Hospital Standardization" and a portion of the supplementary report of the Board of Trustees.

Organizational plans which will set this Commission in motion have been completed, the commission to convene in Chicago on Dec. 15, 1951 for its first meeting. The Commission will be made up of 18 members, six representing the American Medical Association, six the American Hospital Association and three each from the American College of Physicians and the American College of Surgeons. Those on the Commission representing the American Medical Association are: Drs. Gunnar Gundersen and Stanley Truman for terms of three years; Drs. Dwight A. Murray and Herman G. Weiskotten for terms of two years, and Drs. Rolland Whitacre and Julian P. Price for terms of one year. These members of the Commission representing the American Medical Association are truly representative of the administrative, general practice and specialty departments of the American Medical Association and, because of their qualifications, it is hard to conceive that their efforts will not be crowned with success.

Your committee visualizes the wide scope of the problems which will be placed before this body. For instance, the questions besetting hospital accreditation along with kindred problems will be but a beginning. Your committee is in entire accord with the ideas relating to the purpose of the Commission, with the apportionment of members from the respective representative organizations who will make up the Commission and with the organizational plans.

Financial Support of Medical Education and Report of the American Medical Education Foundation: Again your committee has taken the liberty of combining two reports in the belief that it will make for better correlation. The gist of the comments to be found in the first portion of this report will be found in the report of the Council under the heading "Financial Support of Medical Education," and in the report of the American Medical Education Foundation.

Considerable discussion was devoted to this subject. It was pointed out that there are many focal points through which contributions of physicians for financial support of medical education are channeled. These agencies are on local, state and national levels. Many physicians have contributed to one or more of these agencies; some earmark their contribution for a particular medical school. It is suggested that the names of donors with the amount contributed be relayed by these agencies to the Foundation so that all contributions may be acknowledged. If this is done, it will be shown that the number of physicians contributing to this cause will be greatly increased over those making direct donations to the fund. If this is done, it will be most helpful in attracting the attention of many within and outside the allied professions to the fact that the physicians of the United States are not only backing the movement vocally but with their hard cash as well, which may in turn prompt them to forward their contributions to the fund.

Projecting the aims of the Foundation into the future, the plans for the distribution of the fund to medical schools annually shape up as follows: (a) Equally divided grants between the respective medical schools (present plan); as the fund grows (b) per capita grants based on enrolment at the respective medical schools, and (c) special grants where special needs are designated. In the future all contributions earmarked for a particular medical school will be turned over to that school along with its proportionate share of the general fund.

There should be set up in the constituent medical associations committees which would try to obtain contributions from all of their members. Your committee commends and agrees with the suggestions contained in the extemporaneous remarks on this subject delivered by Dr. Elmer L. Henderson to the House of Delegates on Tuesday, December 4.

In the report of the Council on Medical Education and Hospitals the following statement occurs: "The gap between unmet needs and available funds has been narrowed to a point where if the National Fund for Medical Education and the American Medical Education Foundation can provide an annual fund of from five to ten million dollars, the gap that remains for many schools will be all but eliminated." With this in mind, it should be a stimulus to all of us not only to give but to give more than we have given in the past.

For clarification it should be pointed out that the National Fund has been conceived as an agency to raise funds on a wholesale basis from organized groups, whereas the Foundation is designed to raise funds specifically from the medical profession. The two agencies work in close relationship, this being attested to by the fact that members of the Board of Directors of the Foundation serve on the Advisory Council of the Fund.

Your committee is of the opinion that this project should have the sympathy and encouragement of every member of the medical profession, to the end that all physicians contribute liberally each year to the fund.

On the matter of contributions by doctors to the American Medical Education Foundation the attention of the House is called to the fact that the revision of the By-Laws which provides that Fellowship status will be discontinued means a loss to the American Medical Association of approximately $350,000. This money could well be used by the American Medical Education Foundation. It is recommended that the Board of Trustees explore the feasibility of reactivating the Fellowship status in recognition of those doctors who annually contribute, as liberally as they can, to the American Medical Education Foundation.

Brochures with subscription blanks have been distributed at the Convention Hall during this Clinical Session and these should be made available to every county medical society in this country so that local committees may utilize them in efforts to obtain subscriptions to the fund.

Report of the Council on Medical Education and Hospitals: There were three resolutions referred to the Council on Medical Education and Hospitals during the annual 1951 session held in Atlantic City. The first had to do with the multiplicity of medical meetings with particular reference to the requirement of attendance at hospital staff meetings; the second recommended that at least eight of the 24 months' general practice residencies be devoted to surgery four of which would embrace operating room experience, and the third recommended that the Council set up standards of qualifications for physicians who would apply radium in hospitals. These resolutions have had the consideration of the Council. The Council recommends that the resolutions, because of their complexities, be referred to the newly appointed Joint Commission on Accreditation of Hospitals for further study. Your reference committee is in agreement with this plan.

Medical Education and National Defense: Your committee would remind the House of Delegates that the Council has embarked on a plan which will maintain "a flow of well trained physicians adequate to meet the needs of both the armed forces and the civilian economy during partial or complete mobilization."

Survey of Medical Education: The Survey of Medical Education by the Committee on the Survey of Medical Education under the sponsorship of the Council on Medical Education and Hospitals and the Association of American Medical Colleges has been in progress for the past two years. It has entailed a tremendous amount of work which is still unfinished. Therefore, it will not be possible to publish the complete report prior to the spring of 1952. It might be pointed out that the Subcommittee on Preprofessional Education of the Survey of Medical Education has made an intensive study during the past year of preprofessional education. The committee has visited approximately 100 colleges and universities offering such educational opportunities. A detailed report of this study will be forthcoming in the near future. Your committee would also like to point out that detailed information has been obtained by the Council on Medical Education and Hospitals from 19 medical schools offering preceptorships, a report on this study appearing in the 1951 Educational Number of THE JOURNAL. The Committee for the Survey of Medical Education is also investigating preceptorships and will present its findings in its final report.

Foreign Medical Schools: The Council, collaborating with the Association of American Medical Colleges, has made a detailed study of foreign medical schools for the purpose of evaluating their curricula. It is interesting to note that the original list of 38 schools published in February 1950 has been expanded to 49 with the recommendation that their graduates be given consideration when applying for licensure on the same basis as graduates of approved medical schools in the United States. This list of acceptable foreign medical schools is of invaluable aid to licensure boards throughout the United States.

V 14
1951

Graduate Training: The great amount of work covered in the continuation study of graduate training programs may be attested to by the fact that from October 1, 1950 to September 30, 1951, the Council's field representatives visited 574 hospitals for the purpose of reviewing and evaluating 238 internship programs and 1,437 residency programs. The Council's program envisages that every hospital approved for internship and residency training will be inspected at least once every two years.

The supply and distribution of interns has proven to be a difficult problem for solution. Your reference committee would point out that for many years the House of Delegates has received resolutions having to do with this subject. A special committee was appointed by the House of Delegates under the chairmanship of Dr. William Bates of Pennsylvania to study the many ramifications incident to this matter and presented a report to the House of Delegates in 1949. This report has been most helpful to the Council.

A Resolution on Approval of Internships from the Oregon State Medical Society was received by the House at this session. This, along with many other similar resolutions, the report of Dr. Bates' Committee and the material now in the hands of the Council will be turned over to a committee recently appointed by the Board of Trustees and known as the Advisory Committee on Internships. This committee held its first meeting in September 1951, at which time the overall subject was reviewed. Plans are now in process for the future development of the study, the results of which will not be forthcoming for at least another year because of the tremendous amount of detail.

It is interesting to note that the number of hospitals approved for residency training has increased from 1,071 in 1950 to 1,120 in 1951, and that residency programs in general practice increased from 32 in 1950 to 66 in 1951, an increase of 34.

In the Council's report it is pointed out that the Council has worked in close collaboration with the American Board of Internal Medicine and the American College of Physicians for the purpose of evaluating approved residency programs in internal medicine. This study has been aided to a considerable degree by a contribution of $1,500 from the American College of Physicians and another of $1,000 from the American Board of Internal Medicine. These two organizations are to be commended for their direct support and interest.

Technical Schools: Your committee has been impressed with the work being done by the Council on Medical Education and Hospitals in collaboration with the Council on Physical Medicine and Rehabilitation relating to the personnel, training facilities, standards and curricula of technical schools. This study in the mind of your committee has been long overlooked, and it is good to know that these studies will be continued. It is appreciated by all concerned that those who would choose this vocation should not be hampered by the demand that they hold a college degree. Definite principles for the guidance of those conducting technical schools will be forthcoming in the near future.

Collaboration with Other Agencies: It is noteworthy that the Council on Medical Education and Hospitals is increasing its efforts to collaborate with other agencies interested in the many phases of medical education. This endeavor has become one of the most significant parts of the Council's program in terms of time, energy and importance.

Annual Congress on Medical Education and Licensure: Your committee would like to call the attention of the House of Delegates to the fact that on February 11 and 12, 1952, the Congress on Medical Education and Licensure will meet in Chicago. This meeting is one from which stems constructive information which in turn has been applied to the betterment of medical education and the licensing of physicians. Your committee suggests that those interested in these subjects attend these sessions.

The remainder of the report of the Council on Medical Education and Hospitals is purely informative.

Supplementary Report of the Council on Medical Education and Hospitals: This supplementary report points out that during the past year the Council has been engaged in a periodic revision of its "Essentials of an Acceptable Medical School." This work has been completed and the Council requests that the House of Delegates adopt these Essentials. The "Essentials of an Acceptable Medical School" was first approved by the House of Delegates of the American Medical Association in 1910, since which time 8 revisions have been made. Copies of this report have been distributed to the members of the House of Delegates. Your committee has given considerable study to its contents. Your committee, suggests that the third paragraph of section "III Faculty" be edited to read:

"Reasonable security of tenure must be assured in order that the personnel of the faculty may have adequate stability. Salaries of full time members of the faculty should be sufficient to enable them to support themselves and their families without the necessity of diverting time and energy to other occupations."

Your committee would also like to call attention to the statement made in section "X Curriculum," which is as follows: "No rigid curriculum for accomplishing these objectives can be prescribed." To this your committee heartily subscribes.

Your committee would like to commend the Council on Medical Education and Hospitals for the work completed in furthering improvements in medical education and hospital standardization. The Council has done a tremendous amount of work and in the opinion of your committee has done an admirable job.

Report and Supplementary Report of Council on Scientific Assembly

Dr. Henry R. Viets, Chairman, presented the report of the Council on Scientific Assembly (see THE JOURNAL, Nov. 24, 1951, pages 1278-1279) and the following supplementary report, both of which were referred by the Speaker to the Reference Committee on Sections and Section Work:

The Council on Scientific Assembly met with the section secretaries on October 16, 1951 in Chicago. Another meeting of the Council was held on December 3 in Los Angeles. This supplementary report deals with the principal business transacted at these meetings.

1952 ANNUAL SESSION

The request from the Smith, Kline and French Laboratories for permission to televise at the Chicago Annual Session was granted. The time schedule for the General Scientific Meetings and the section meetings was revised and will be put into effect at the Chicago Session. The General Scientific Meetings wil be held all day on Monday and on Friday morning. The sections will meet both mornings and afternoons, on Tuesday, Wednesday and Thursday. It is hoped that this arrangement will obviate the difficulties encountered for many years by sections meeting on Friday afternoon, after the closing of the Scientific Exhibit at noon. The programs of both the General Scientific Meetings and the section meetings are well developed at the present time with speakers of national importance on timely topics of interest to the medical profession in general.

1952 CLINICAL SESSION

The general plan adopted, but not used, for the Clinical Session that was to have been held in Denver in 1950 will again be put into effect at the session to be held in the same city in December 1952. The Council has already conferred with Dr. William B. Condon, Chairman of the Local Committee on Arrangements, in regard to the program and will meet with his committee in April 1952, in Denver, to consider the program in detail.

1953 ANNUAL SESSION

The Council has considered the preliminary plans for the New York Annual Session in 1953. As that year will mark the 300th anniversary of the founding of New York City and a Tercentenary Celebration is planned by the city, the Council would suggest that an historical presentation, by exhibit and lectures, of three hundred years of New York medicine might be made a feature of the meeting.

Respectfully submitted,

HENRY R. VIETS, Chairman.
STANLEY P. REIMANN.
ALPHONSE MCMAHON.
CHARLES H. PHIFER.
CARL A. LINCKE.
MICHAEL E. DEBAKEY.
SAMUEL P. NEWMAN.

Report of Reference Committee on Sections and Section Work

Dr. T. C. Terrell, Chairman, presented the following report, which was adopted:

Your reference committee studied the report of the Council on Scientific Assembly as well as the supplementary report of that Council. The committee wishes to recommend that the Council on Scientific Assembly proceed with its plans for a suitable program embodying the tercentennial celebration of New York during the 1953 Annual Session in New York City. Your committee accepted both the report of the Council on Scientific Assembly and its supplementary report, and wishes to commend the Council in its present policy of trial variations in the routine meeting dates of the general and section meetings during the annual sessions.

Report and Supplementary Report of Council on Medical Service

Dr. James R. McVay, Chairman, presented the report of the Council on Medical Service (see THE JOURNAL, Nov. 24, 1951, pages 1279-1281) and the following abstract of a supplementary report, mimeographed copies of which were distributed among the members of the House of Delegates. (The complete supplementary report will appear in the Official Proceedings of the House of Delegates, which is published separately.) The report and supplementary report of the Council were referred to the Reference Committee on Insurance and Medical Service.

ABSTRACT OF SUPPLEMENTARY REPORT

As a standing committee of the House of Delegates the Council on Medical Service reports at each session, both annual and clinical.

At this time I should like to invite your attention to a montage depicting the four pilot "You and Your A. M. A." programs. Mention is made in the Board of Trustees report concerning the success and future of these programs.

I should also like to submit to the House of Delegates an elaboration of the section of the Council's report having to do with the Physician Placement Service activities. At the annual session in June 1951 the House approved four recommendations for expanding the Association's activities in the placement field. The Council has followed through on these recommendations and, through its Committee on Extension of Hospitals and Other Facilities, has taken steps to carry out these recommendations. At this time I shall not read the details in regard to our suggestions but copies are available to members of the House.

Memorial To Dr. A. W. Adson

This report would not be complete without a word of appreciation of the services of Dr. A. W. Adson, who was stricken while attending the North Central Conference in Minneapolis and died the following day, November 12, 1951. In addition to his outstanding scientific attainments, he gave unstintingly of his time and energy to perpetuate and further the high standards of the medical profession.

Dr. Adson was a leader in the creation of the Council on Medical Service in 1943 and served on the Council from its origin until 1948. Part of that time he was its Vice Chairman and more recently served as chairman of the Council's Committee on Prepayment Hospital and Medical Service. He will be missed by all members of the Council, by the members of the House of Delegates and by his many friends throughout the country who have had the privilege of his counsel and friendship.

Respectfully submitted,

James R. McVay, Chairman.
Elmer Hess, Vice Chairman.
Jesse D. Hamer.
Joseph D. McCarthy.
Thomas A. McGoldrick.
H. B. Mulholland.
John W. Cline.
E. L. Henderson.
David B. Allman.
Mr. Thomas A. Hendricks, Secretary.

Report of Reference Committee on Insurance and Medical Service

The material from the Council on Medical Service was considered under the several headings given in its report.

The subject of Voluntary Health Insurance as presented in the published report, as well as in the Suggested Amended Statement, subsequently added by the Council and included in its supplementary report, is approved by your committee without additional change or correction. The subject of Federal Medical Services is presented by the Council. Your committee approves of the presentation.

The subject of Physicians Placement Service, as well as a supplementary report received by your committee from the Council on Medical Service, ably discusses the problem of physician placement. Your committee compliments the Council on the thoroughness with which this important subject was investigated and approves of the report as presented.

On the subject of Maternal and Child Care, your committee approves of this as presented but wishes to reaffirm further the committee's firm belief in private care through a private insurance carrier where possible. It holds that ample private facilities exist or could readily be provided, without federal interference, for maternal and child care.

The Care of the Indigent is a fundamental, crucial problem that must be solved. Your committee congratulates the Council on Medical Service for its work on this all important problem and approves of its efforts to date.

Your committee further wishes to compliment the Council on Medical Service on its efforts to develop liaison with other organizations. It is through a united effort that progress is being and will be made towards the goal of improved medical care.

Your committee studied with deep interest the Loan Kits used by the Council on Medical Service in its various presentations over the country on its general topic of "You and Your A. M. A." We believe such presentations should be encouraged and expanded as opportunity affords so that all members of the medical profession the country over may know and understand the organization and workings of the American Medical Association.

Report of Committee on Constitution and By-Laws

Dr. Louis A. Buie, Chairman, presented a 23 page report of the standing Committee on Constitution and By-Laws, which was divided into four sections: A, B, C and D. Section A had to do exclusively with amendments to the Constitution and the By-Laws so as to establish the single membership classification which was recommended by the House of Delegates at the annual session in June 1951. The Speaker declared that there would be no referral of Section A of the report, since the amendments included therein must lie over for final action until the next session of the House. Section B presented for final action amendments to the Constitution submitted at the June 1951 session. Section C included amendments to the Constitution, exclusive of those under Section A, presented for the first time at this session of the House of Delegates, which must lie over until the June 1952 session. Section D presented amendments to the By-Laws which could be acted on at this session, and a recommendation that the Resolution on Emeritus and Retired Membership introduced at the 1951 annual session be not adopted.

The Speaker referred Sections B and D of the report to the Reference Committee on Amendments to the Constitution and By-Laws, declaring that Section C, as well as Section A, must lie over, without referral at this session, until the June 1952 session.

Report of Reference Committee on Amendments to the Constitution and By-Laws

This report covers Sections B and D of the report of the standing Committee on Constitution and By-Laws. These sections of the report were referred by the Speaker. Sections A and C of the report must, under our regulations, lie over for action until the next session of this House of Delegates.

V 147
1951

Your reference committee appreciates the great amount of work done and the time spent in preparing the Amendments to the Constitution and By-Laws, and desires to commend the standing committee for thorough and efficient performance of an arduous task. Your reference committee approves all of the amendments and recommendations presented by the standing committee in Sections B and D of its report, which are herewith presented in detail:

AMENDMENTS TO THE CONSTITUTION

1. Article 6, Section 2: This matter was held over, under the rule, from the June 1951 session at Atlantic City, being an amendment to the Constitution, and is, in reality, a composite of several resolutions introduced at that time. Its effect is to add to the membership of the House of Delegates the Assistant Secretary of the American Medical Association and two delegates elected by the Student American Medical Association as ex officio members without vote, and to give the five immediate Past Presidents of this Association voting membership.

The standing Committee on Constitution and By-Laws has recommended that "that portion of the amendment which provides that five immediate Past Presidents of the American Medical Association shall be voting members of the House of Delegates" be rejected. The standing committee believes that, "so far as possible, the voting power of the House of Delegates should be limited to elected delegates; the committee recognizes the propriety of delegate representation from the Armed Forces and the Veterans Administration but believes that extension of such voting power to non-elected representatives is unwise." Your reference committee concurs in this recommendation, and points out that at present all Past Presidents are members of the House without vote. The amended section would then read:

"Sec. 2.—The House of Delegates is composed of delegates elected by the constituent associations and by the sections of the Scientific Assembly and of delegates from the Medical Departments of the United States Army, the United States Navy, the United States Air Force, the United States Public Health Service and the Veterans Administration, appointed by the Surgeon-General or Chief Medical Director, as the case may be, of the respective service. The general officers, the Past Presidents of the Association, the General Manager, the Assistant Secretary, the Editor of The Journal of the American Medical Association, the chairmen of the several Councils and two delegates elected by the Student American Medical Association shall be ex officio members of the House of Delegates without the right to vote."

2. Article 6, Section 3 of the Constitution: Add the words "of the American Medical Association" after the words "active members" in the third line of this Section, so that this sentence will read: "Sec. 3.—The number of delegates from the constituent associations shall be proportional to the number of active members of the American Medical Association in the respective associations as provided in the By-Laws." This is an obvious clarification, and your committee recommends its adoption.

These are the only amendments to the Constitution on which your committee has had to take any action. The balance of this report deals with amendments to the By-Laws.

AMENDMENTS TO THE BY-LAWS

3. Chapter II, Section 2.—Dues. In the first line of this Section, insert the words "for active members" after "annual dues." Seventh line, insert the word "membership" before the word "due." at the beginning of the sentence, and at the end of this sentence add, after the word "Association," the following: "unless a Member requests another scientific journal published by the American Medical Association in lieu of The Journal of the American Medical Association." Change the fourth sentence of this Section to read: "The Board of Trustees may excuse the following members from payment of dues, provided they are fully or partially excused from the payment of local dues by their component and constituent associations:"

Amend subsection (D) of this Section to read: "A Member temporarily in the Armed Forces. Dues will be remitted from January 1 or July 1 following the date of the Member's entrance into military service, regardless of local dues exemption."

Amend subsection (E) to read: "Members may be excused, on request, from the payment of American Medical Association dues, regardless of local dues exemptions, on January 1 following their 70th birthday."

Amend the last paragraph of this Section by substituting the date "June 1" for the date "December 31" in the second line. This sets the deadline for delinquency. This amendment was recommended by the Board of Trustees for administrative reasons, since the present delinquency date, "December 31 of the year for which dues are prescribed," is so late that the membership list for one year cannot be determined until the next ensuing year.

4. Chapter III.—Disciplinary Action. In the third sentence, delete the words "the House of Delegates on the recommendation of" and the word "and" following the words "Judicial Council" and add after the phrase "expel any member" the phrase "of the American Medical Association." Delete, also, the last sentence of this Chapter, which begins "The hearing . . ." Chapter III will then read: "In all controversies between a Member and his component society or constituent association, an appeal may be made to the Judicial Council on questions of law and procedure only, but not of fact. The appeal shall be perfected within six months following the date of decision by the constituted authority of the constituent association in question. In addition to such disciplinary action as may be taken under the constitution and by-laws of the component society and constituent association to which the Member belongs, the Judicial Council, after due notice and hearing, may censure, suspend or expel any Member of the American Medical Association for an infraction of the Constitution or these By-Laws or for a violation of the Principles of Medical Ethics."

These changes are suggested because, in its present form, the wording conflicts with the duties of the Judicial Council as outlined in Chapter X.

5. Chapter IV, Section 2, (A) (2) Service Fellows. About the middle of this Section, after the words "Veterans Administration," add the words "and the Indian Service," and in the eighth line delete the word "its" and substitute the words "their respective," and add an "s" to the word "Director" in the following line, so that the first sentence of this subsection will read: "(2) Service Fellows.—On approval of the Judicial Council, commissioned medical officers of the United States Army, the United States Navy, the United States Air Force or the United States Public Health Service, who have been nominated by the Surgeon General of the respective services, and the permanent medical officers of the Veterans Administration and the Indian Service, who have been nominated by their respective Chief Medical Directors, may become Service Fellows." Note that this refers to Fellows. This will be changed, along with the balance of the By-Laws, when amendments are adopted to provide for a single membership classification.

6. Chapter IX, Section 1 (A). Delete from the last two lines the phrase "session of the House in which he is to serve" and substitute therefor the phrase "date on which he is to assume office." This is to obviate an awkward situation that might theoretically arise, as a Delegate actually is in office on January 1 of the year for which he is elected, although a session is not ordinarily held until June.

7. Chapter IX, Section 1 (B). Delete the end of the first sentence after the word "appointment." This clause is now obsolete.

8. Chapter IX, Section 3 (C) (2). Change the word "attachés" to the phrase "members of the staff."

9. Chapter X, Section 1 (A). Add after the words "Standing Committees" the word "Councils" in parentheses.

Chapter X, Section 4. Add the word "Councils" in parentheses after the title "Standing Committees." In subhead (5) of this Section, change the word "Committee" to "Council."

10. Chapter X, Section 4 (B).—Change the letter (B) to (A) and delete the final clause of the first sentence of the second paragraph, beginning "except that . . .", so that the sentence will end at the word "expires." This clause is now obsolete.

In the last sentence of this paragraph delete the words "the Secretary of the Association and the Editor of The Journal," since these officials are already members of all standing committees as provided in another section of the By-Laws, and substitute the phrase "an ex officio member" for the present phrase "ex officio members."

11. Chapter X, Section 4 (B). In the sixth line of the fourth paragraph insert after "Board of Trustees" the phrase "selected by the Board," and after the word "Council" in the next line add the phrase "except that the President and the Trustee member shall be ex officio members without vote."

At the beginning of the next paragraph substitute the word "Council" for the words "Standing Committee." Delete the entire second sentence of this paragraph beginning with the words "At the 1951 Annual Session. . . ." This sentence is now obsolete. In the tenth line of this paragraph add after the words "Board of Trustees" the phrase "selected by the Board," and change the word "committee" in the next to the last line of the paragraph to "Council."

12. Chapter X, Section 4 (F). Delete the word "subcommittees" in the second line, replacing it with the words "special committees."

In the same Section 4, subsection (H), in place of the phrase "a report," in the second line, substitute the phrase "an annual report" and add a new sentence at the end of this paragraph, as follows: "Only urgent special reports shall be submitted at the annual session."

Reletter the subsections "C" to "I" inclusive, in Section 4, each respectively with the preceding letter of the alphabet.

13. Chapter X, Section 4 (I) (5). Substitute for the phrase "standing committee" the word "Council."

14. Chapter XII, Section 1 (B). Substitute for the phrase "Scientific Assembly" the phrase "annual session."

15. Chapter XII, Section 1 (C). Delete the words "and of the Board of Trustees" at the end of the paragraph. This is provided for in Chapter XIII under "Composition of the Board of Trustees."

16. Chapter XII, Section 2 (A). Delete the words "and the Board of Trustees" at the end of this paragraph (A).

17. Chapter XIII, Section 1. In the fifth line of this Section add the words "the Assistant Secretary" before the words "the Treasurer," and add in the same sentence of the same Section, after the words "the Editor of The Journal," the words "and others at the invitation of the Board."

18. Chapter XIV, Section 1. Change the words "Scientific Assembly" in the third line of this Section to the words "Annual Session."

A Resolution on Emeritus and Retired Membership introduced at the June 1951 session of the House of Delegates was referred to the standing Committee on Constitution and By-Laws for consideration. The standing committee recommends that the resolution be not adopted, in view of the fact that the present Constitution and By-Laws provides for Associate Membership in the American Medical Association for those members of constituent associations who are not eligible for active membership, and for exemption from dues of those active members who are over the age of seventy or are retired from practice. In the opinion of the standing committee, therefore, the present Constitution and By-Laws already provides categories of Membership similar to emeritus and retired membership. Your reference committee concurs in this opinion and recommends that the resolution be not adopted.

On motions duly made, seconded and carried, after discussion, the proposed amendments to the Constitution and to the By-Laws were adopted, as was the report of the reference committee section by section and as a whole.

Introduction of Delegates from Student American Medical Association

The Speaker introduced to the House of Delegates the delegates of the Student American Medical Association, Mr. James Allen Henderson of the University of Oregon and Mr. David Buchanan of the University of Illinois.

Report of Coordinating Committee

Dr. Elmer L. Henderson, Chairman, presented the following report of the Coordinating Committee, which was referred to the Reference Committee on Legislation and Public Relations:

Mr. Speaker, Members of the House of Delegates:

Three years ago, on Dec. 1, 1948, in a momentous session at St. Louis, which should long be remembered by every doctor who values his right to practice in freedom, this House of Delegates adopted a Statement of Policy which may well be called American Medicine's Declaration of Independence. It was a ringing declaration of belief in medical responsibility and in voluntary action, as opposed to compulsion, in meeting the problem of providing prepaid medical care for the American people. It was a forthright declaration, too, that American medicine would fight to defend and maintain its freedom. We were in great difficulty when that Statement of Policy was adopted, with the serious threat hanging over us that a nationwide system of socialized medicine would be enacted before we could even mobilize our forces and inaugurate the National Education Campaign which the House of Delegates had authorized. This committee, which had been directed to organize and supervise the national campaign of public education, met and worked for months in a continuous state of emergency and there were many who told us that we had started too late, that we should have bowed to the inevitable and sought a compomise with those in the Government who were determined to take over control of medical practice.

On this third anniversary of medicine's Declaration of Independence, it is important that we make realistic appraisal of what we have achieved in order to be very sure of where we stand today and what should be our course for the future.

In the prosecution of our campaign, medicine has accomplished all of the objectives we set ourselves at the outset, and more. The destructive legislation designed to create a Government-directed system of compulsory health insurance was stopped well within our time limit. Constructive programs in scores of fields have been set in motion or emphatically strengthened. A strong, new measure of public approval and friendly understanding has been earned for our profession by reason of the fact that doctors carried their case directly to the American people. All the many objectives attained, the methods used to accomplish the work and the costs involved have been reported in detail at each meeting of this House during the three year period, in order that all members would be closely advised of the campaign's vicissitudes, its triumphs and its progress toward ultimate success.

Perhaps the most significant figures which could be cited in this report are the most recent compilations of the number of Americans who are protected today under Voluntary Health Insurance. These figures furnish the most conclusive proof of medicine's conviction that "the voluntary way is the American way." The latest figures disclose that in the three years since our nationwide campaign of education was launched, there have been 25,000,000 additional enrolments in the Voluntary Health Insurance plans of the country, and that today approximately 77,000,000 people in the United States have some form of prepaid health protection. The American people are thus demonstrating in splendid fashion that they believe, with us, in Voluntary Health Insurance as opposed to compulsory Government-dominated plans.

The only other figures important to record here today concern our campaign finances. As you will recall, our first year's campaign, which encompassed the first nationwide distribution of informative material, cost approximately $1,500,000. In the second year, when our program included the very successful national advertising campaign, our expenditures totaled just under $2,500,000. This year we were able to reduce our expenditures to about $500,000. For the coming year's work, due to the progress which has been made, we have been able to cut our budget to less than a quarter of a million dollars.

The work of the Campaign Coordinating Committee in the year ahead will be of a somewhat different order from that of the past. We must, of course, continue to be alert and ready for any threats of compulsory health insurance or other legislation designed to regiment the medical profession. Our campaign organization must be geared to combat such proposals and to win.

As the members of this House of Delegates are aware, the present national administration is expected to make a vigorous renewal of its demand for compulsory health insurance legislation in the first month of the coming session of Congress. It should also be noted that Gov. Earl Warren of California, a declared candidate for the Republican nomination for President, recently has renewed his agitation for compulsory health insurance. There is no partisanship in American medicine's approach to this problem and every doctor should be advised that Gov. Warren's record on this issue, is just as destructive to medical freedom as that of the present national administration.

We must, of course, do all in our power to support and encourage the broad program for improved medical care and service, which is being guided by the American Medical Association

V 14
1951

and its constituent medical associations. We must maintain the interest and the friendly cooperation of the many thousands of organizations whose support we have won in our campaign against regimentation. But the election year ahead is perhaps the most critical year of the medical profession's existence as a free society, dedicated to the health of a nation, unhampered by politics. Before this time next year, the die will be cast as to who will be responsible for the health of Americans in the future, whether medical men or politicians of socialistic persuasion. The character and caliber of the men elected to Congress next year and to the high administrative offices of our Nation will determine that vital issue. With the same sincerity of purpose which has guided medicine in its crusade against socialization, we believe that the doctors of America, exercising their rights as individual citizens, are determined to help decide the outcome of the fundamental question as to whether this Nation shall surrender to socialism, or shall remain a free nation, dedicated to the principle of human liberty.

It is apparent that Americans expect such help and such leadership in their home communities from doctors who have led the three year crusade to turn the edge of socialism. During the months ahead, this committee intends to urge doctors to exercise their precious privileges as alert and responsible citizens. Every doctor will be meticulously advised that his medical society, as an incorporated organization must not participate in election activities. But every doctor will be as carefully advised as to what he may do legally as an individual citizen who cares about the course of his country to help determine that course. We intend to urge doctors, as independent individuals, to study the background and the beliefs of every candidate for public office, irrespective of party labels or partisan considerations. We intend, frankly, to urge doctors, as good citizens, to support and encourage the public service of men and women of high moral integrity, who know the values of individual responsibility and who advocate and practice the precepts of Americanism, not socialism nor any other foreign-born ism.

As you know, Whitaker and Baxter have been retained on a half time, counselling basis to direct this work.

This we believe to be the only appropriate culmination to the work of preserving the freedom of the medical profession and, at this crucial time in American affairs, we believe this to be the greatest contribution we can make to our country.

In the annals of our profession and as future generations judge us, we believe that it shall always stand to the honor of this House of Delegates and as a tribute to the practicing physicians of this era that when we faced up to the issue of state socialism, we had the courage to resist appeasement and to refuse to compromise either our medical principles or our belief in the basic principles of American freedom.

ELMER L. HENDERSON, Chairman.
LOUIS H. BAUER, Vice Chairman.
EDWIN S. HAMILTON.
GUNNAR GUNDERSEN.
WALTER B. MARTIN.
WILLIAM BATES.
R. B. ROBINS.
GEORGE A. UNFUG.
GEORGE F. LULL.
E. J. MCCORMICK.

REPORT OF REFERENCE COMMITTEE ON LEGISLATION AND PUBLIC RELATIONS

Dr. R. B. Robins, Chairman, presented the following report, which was adopted:

Report of the Coordinating Committee and the Supplementary Report of the Board of Trustees Regarding the Coordinating Committee: Your committee approves of this report and recommends its adoption. Again we express our appreciation of the splendid report submitted.

Report of American Medical Education Foundation

Dr. Elmer L. Henderson, President, presented the report of the American Medical Education Foundation (see THE JOURNAL, Nov. 24, 1951, pages 1281-1282) and the following extemporaneous supplementary report, which were referred to the Reference Committee on Medical Education and Hospitals:

At the interim session last December in Cleveland, the Board of Trustees of the American Medical Association made a contribution of a half million dollars to medical education. Shortly after that time, the American Medical Education Foundation was formed. We had as a nucleus at that time the half million dollars contributed by the Board of Trustees of the American Medical Association and a few thousand dollars contributed by the officers of the Association and members of this House of Delegates. At the same time and on the day that the original contribution was announced, Medical Economics contributed $5,000 in cash and $5,000 in advertising space.

We had hoped that the early part of this year we would be able to report at least a million dollars contributed by the medical profession of this country, but we have been far from our million dollars even up to this time. In addition to the half million dollars contributed by the American Medical Association, up to Nov. 23, 1951, $265,401.85 has been contributed. From November 23 to November 28, $1,371 was contributed. You will note that that is far below our million dollar goal for this year.

Among the contributions, there were 37 donations from lay people, 1,361 from individual doctors out of our membership of approximately 140,000. The organizations which contributed numbered 25. I am happy to say that when I came in this room this morning I was stopped by Dr. Henry S. Ruth and notified of a contribution of $2,500 from the American Society of Anesthesiologists. There have been a number of contributions from organizations that I have announced previously before this House of Delegates. For instance, in June I announced a contribution of $10,000 from the Woman's Auxiliary to the American Medical Association, which was certainly a very liberal contribution from a group that has such limited funds. Since that time several other organizations have contributed. There have been some state medical societies that have contributed. Among such contributions, the greatest from any state society was $102,955 contributed by the members from California. That is by far the largest contribution that we have received from any state organization or from the various doctors of any state. It ranges from that down to nothing. There are three states in the Union where there has not been a single doctor who has contributed to this fund.

Since it was brought to the attention of the officers and the Board of Trustees that a few had neglected to contribute, every one of them has contributed. But there are a very large number of members of this House of Delegates who have not contributed, and I hope before we leave this meeting we shall have a contribution from every member of the House. We have got to prove to the folks in Washington who are trying to regiment us that we are in earnest, that we are determined to support medical education. If the Federal Government ever takes control of medical education, it is not going to be long until they will have full control of the medical profession, and the only way that we can defeat that is to support medical education.

The National Fund for Medical Education, headed by the Hon. Herbert Hoover as Honorary President, has done a great deal toward raising funds and at this time is making more progress than ever. We joined with them in July, at which time we furnished $640,882.90, and a distribution was made to every four year medical school in this country of $15,000, and to every two year school of $7,500. That was the initial contribution from the combined two groups. We had hoped by the first of next year to make another distribution, but our funds have been coming in very slowly recently. However, we are encouraged, due to the fact that we have been notified by quite a number of state medical societies that committees have been formed to solicit funds from the members, and some have notified us that they have quite a little money on hand, which we hope to receive before the end of the year. But, gentlemen, I hope that each and every one of you will take this matter seriously and not only donate to this fund yourself but also go back home and see that committees are formed and see that more support is given this movement. It is imperative that we do not fall down on this movement for collection of funds for medical education.

The report of the Reference Committee on Medical Education and Hospitals on the above report will be found in the report of the reference committee following the report of the Council on Medical Education and Hospitals on page 1688.

Supplementary Report of Board of Trustees

REPORT OF COMMITTEE ON BLOOD BANKS

Dr. Herbert P. Ramsey, presented for Dr. L. W. Larson, Chairman, the following report of the Committee on Blood Banks, which the Speaker referred to the Reference Committee on Hygiene and Public Health:

Committee Activities: The Chairman and various members of the Committee on Blood Banks have been in frequent and at times continuous contact with representatives of the various agencies concerned with the blood program. These agencies are the Department of Defense, the Federal Civil Defense Administration, the American National Red Cross at the national level and at some local levels, the American Hospital Association, the American Association of Blood Banks, independent blood banks not members of that Association and, in most recent times, the Health Resources Advisory Committee of the Office of Defense Mobilization and its Committee on Blood. The committee's efforts have been directed mainly toward maintaining the integrity and operating capacity and efficiency of all blood banks and blood collecting centers, to assist in their coordination in the National Blood Program and to help solve jurisdictional disturbances in local areas.

On Dec. 1, 1951, in Los Angeles, the committee heard reports from the Department of Defense, the Federal Civil Defense Administration, the American National Red Cross and the American Association of Blood Banks.

To mobilize the committee's resources to assist in the solution of administrative and other problems at the local level of blood procurement, the Board of Trustees in October authorized the establishment of a Field Team, the chairman of which is a representative of this committee and other members of which, by agreement, will be designated, as needed, by the United States Department of Defense, the Federal Civil Defense Administration and the American National Red Cross.

Status of the National Blood Program: For the period from December 1950 to October 1951, 43 Red Cross Regional Centers, as shown by the reports of the Office of Statistics of the American National Red Cross, collected 1,894,000 pints of blood of which 1,196,000 were used for civilians and 698,000 went to the Department of Defense. In addition, eleven Red Cross Defense Collection Centers in the period from May through October 1951, collected 81,000 pints, all of which went to defense. Eighteen cooperating blood banks in the period from September 1950 through October 1951 under contract with the Red Cross, collected and turned over to the Red Cross for the Department of Defense 170,000 pints. While the collection periods mentioned here are not exactly the same, it may be observed that through all of its own facilities the Red Cross collected for all purposes, in fifteen months, over two and a quarter million pints of blood and in the same period of time approximately 967,000 pints, including that from cooperating blood banks, were turned over to the Department of Defense. The above figures exclude any direct collections of the Armed Forces Blood Donor Program operated by the Department of Defense within its own installations.

Approximately 275,000 pints of blood per month are being processed into dried plasma. The plasma processing capacity of the nation in the middle of January will be slightly greater. This program employs the services of eight large processing plants under contract to the Department of Defense. At the present time blood collected for plasma production must be collected in citrate and delivered to the processing plant in less than 72 hours from the time of drawing. This time factor creates a transportation problem, especially in cities remote from these processing plants.

Since this committee's report of June 1951, Admiral Ross T. McIntire resigned as chairman of the Medical Policy and Procedure Committee of the Red Cross and has been succeeded by Dr. Russell L. Haden who has been a member of the staff of the blood program. Regional blood centers have been activated by the Red Cross at Cleveland, Ohio, and Birmingham, Ala. Also in that time defense collection centers have been activated at Baltimore; Cincinnati; Pittsburgh; Memphis, Tenn.; Des Moines, Iowa; Fort Worth, Texas; Little Rock, Ark.; Oklahoma City, and Plainfield, N. J. Four more regional centers, at Schenectady, N. Y., New Orleans, Waco, Texas, and Salt Lake City, contemplated in the original Red Cross program, are in process and no further regional centers are to be opened according to the director of the Red Cross Blood Program. Two more defense centers may be opened at Jackson, Miss., and Shreveport, La., and no others are planned, we are informed.

The eighteen independent cooperating blood banks mentioned above are located in the following places: Oakland, Calif.; Miami, Fla.; Dallas, Texas; Denver (2); San Francisco; Milwaukee; Seattle; Minneapolis; Orlando, Fla.; Sacramento, Calif.; Phoenix, Ariz.; San Diego, Calif.; San Mateo, Calif.; Sonoma, Calif.; Spokane, Wash.; Tampa, Fla.; Santa Barbara, Calif., and Fresno, Calif. As of the present date other banks cooperating are those of the Michigan Department of Health and banks in Tacoma, Wash.; Houston, Texas; Jacksonville, Fla.; Albany, N. Y., and Fargo, N. D., and nine banks in Chicago. There is, therefore, a total of thirty-three independent banks cooperating in the Blood Program.

The committee notes the importance of further integration of independent banks into the National Blood Program and observes that in some instances great pressures had to be built up before contracts for Defense Blood were given. The committee recognizes the enormous administrative difficulties involved in the extension of the program, but believes, in view of existing and potential needs for defense and civil defense, that the public interest demands a more widespread active participation in the program to enable it to expand suddenly under the impact of any great emergency. The more than 1,500 blood banks scattered throughout the United States constitute a national asset of the greatest importance. It is therefore again urged that existing facilities, as far as may be practicable, must be brought into the system under proper contracts and that any undermining of these facilities must not be permitted.

In December 1950, and again in June 1951, the American Medical Association recommended to its constituent state medical associations the organization of state committees on blood banks comprising membership from the state medical association, the state department of health, the state hospital association, the Red Cross and the state pathological society. The purpose of such committees was outlined in the recommendation of June 1951 (see THE JOURNAL, July 7, 1951, pages 940-941).

The committee is in possession of information that some type of structure approximating this purpose is in existence in 27 states and territories. It is urged that other state societies having committees on blood banks report the same to the Secretary of the American Medical Association, and that all states see to it that these committees have proper representation for effective coordination within the state. Effective planning within a state demands this arrangement and it will also be requisite for planning for the borderline areas involving two or more states.

The necessity for inspection and licensing by the National Institutes of Health of all blood collection and processing facilities integrated into the National Blood Program has produced a problem in that the staff available in the National Institutes of Health is not large enough to meet all of the demands for such licensing. It has been necessary, therefore, to limit inspections to those banks about to be coordinated into the program. It is recommended that consideration be given to methods of meeting this need; for example, the deputizing of state departments of health where they possess qualified personnel in this field; the use of reserve officers of the United States Public Health Service, and new federal legislation, if necessary.

The sound national agreements entered into between the American National Red Cross, the American Medical Association, the American Hospital Association and the American Association of Blood Banks, have apparently in some instances not been adequately interpreted at the area level of Red Cross or at the state or local level by physicians or the Red Cross Chapters. In some instances confusion and misunderstanding have arisen, but most of these have been resolved at this time. Local emphasis on these misunderstandings, with their reflection in press reports thereof, have at times given the public a distorted view out of perspective with relation to the nationwide program. This of course is regretable, but it would be impossible in a program of such great scope and in such a heterogeneous population as comprises these United States not to have some misunderstandings.

V 14
1951

Red Cross Special Study Committee: The committee is in receipt of a communication from Mr. James C. Nicholson, Executive Vice President of the American National Red Cross, to the effect that on November 19 the Board of Governors of the Red Cross saw a "need for an analytical and objective study of the policies, plans and procedures of the program at the national and local levels, together with the program's relationship to the resources and other responsibilities of the Red Cross." The Board of Governors therefore authorized the president of the Red Cross to "appoint a committee, whose membership shall include representatives of the Board of Governors, the Committee on Medical Policies and Procedures, and the chapters (the President to designate the Chairman). The Committee's duties shall be to study the blood program for the purpose of determining the effectiveness of present policies, plans and procedures at the national and local levels in light of present and foreseeable future commitments, and to make such recommendations as may seem appropriate. The Committee shall make its report to the President for such consideration as he may determine to be desirable by the Board of Governors."

We are not advised as to the names of the members of this committee. We offer the full cooperation of the American Medical Association Committee on Blood Banks. The recommendations of this special committee could go far toward the elimination of some of our recurring problems.

Armed Forces Blood Donor Program: Developing considerable concern at the exhaustion of its World War II reserve of dried plasma, the Department of Defense on August 2 issued a directive from which the following is quoted:

"3. Accordingly, the Department of Defense will begin immediately;

"a. A continuous and vigorous campaign, in conjunction with the Red Cross, to persuade the civilian and military population to contribute whole blood to the Armed Forces.

"b. To establish an Armed Forces blood donor program within the framework of the overall campaign, the primary purpose of which shall be to obtain blood from service personnel on military bases within the continental United States. Civilian employees will be invited to participate.

"4. The Red Cross has agreed to coordinate the collection of blood, primarily from the civilian population, through its existing facilities, cooperating blood banks, and additional Defense Centers established by the Red Cross with the Department of Defense funds. Full cooperation by all echelons of the three Services is urged in convincing the civilian population and military personnel of the vital military necessity of supporting this program.

"5. The responsibility for promotion, publicity and public information of this campaign, plus any free or paid advertising, is assigned for direction and programming to the Directorate of Public Information, Office of the Secretary of Defense. It is desired that both headquarters and field public information offices of the Services lend their full and wholehearted support.

"6. The Armed Forces blood donor portion of the overall program will be under the policy guidance of the Armed Forces Medical Policy Council, Office of the Secretary of Defense. Responsibility for general direction and control of this military portion of the overall program, its comprehensive coordination, integration of shipping schedules and quotas to laboratories, necessary reporting procedures, and technical guidance, is assigned to the Directorate of the Armed Services Medical Procurement Agency, Main Navy Building, Washington 25, D. C., to which all local Armed Forces blood donor programs must be submitted for approval prior to actual collection of blood in order to avoid waste. Existing medical facilities and personnel should be used to the greatest possible extent. In addition, when practicable and within reasonable geographical proximity, the Armed Forces blood donor program should be coordinated with the local Red Cross facilities or cooperating blood banks. The urgency and nature of this program require direct communication, which should be authorized. Necessary funds will be made available by the Directorate from the Department of Defense Blood and Blood Derivatives Fund. It is understood that blood collected in connection with the Armed Forces blood donor program becomes government property and will be shipped to designated facilities as prescribed."

A clarifying memorandum issued on Oct. 9, 1951, within the Department of Defense and signed by W. Randolph Lovelace II, M.D., Chairman, Armed Forces Medical Policy Council, contained the following:

"2. The following policies on civilian participation in this program are furnished for your information and guidance:

"a. Civilians living in areas adjacent to a military reservation on which a blood donor center has been established may donate blood to the Armed Forces Blood Donor Program at the military center on the same basis as civilian employees of the installation, provided no other facilities exist in the area for this purpose or pending their development.

"b. It is not considered desirable from a policy standpoint for blood donor facilities under the auspices of the military departments to be established outside military reservations.

"c. Contractual arrangements with independent blood banks or other civilian groups for the collection of blood in connection with the Armed Forces Blood Donor Program should not be undertaken by the Blood Group, Armed Services Medical Procurement Agency, or any other military agency. Where such arrangements are considered desirable, the cooperation of the American Red Cross should be requested in accordance with existing agreements."

Initially, the use of the term "Armed Forces Blood Donor Program" led to some public confusion as to its location in the overall program, but a perusal of the quotations above from the Department of Defense directives should eliminate any such confusion.

In the thirty days following the directive of August 2, the Department of Defense, with the assistance of a publicity expert employed for the purpose, organized a nationwide publicity campaign employing all media for the development of a public consciousness of responsibility for blood donation. Great credit is due to the wholehearted cooperation and assistance of all segment of the press, radio and entertainment world as well as that of public-spirited organizations of all kinds. At the time of the beginning of armistice negotiations in Korea, blood collections, which had been on the increase, began to diminish. The response to the publicity program has been great. The most difficult part of this task now lies ahead since the nation is under the necessity of maintaining a continuing high level of donations month after month, year in and year out, for a minimum of three years, even without the outbreak of widespread hostilities or the occurrence of a great emergency within our borders as a result of enemy action.

The American Medical Association has the responsibility of assisting in the maintenance of the balance of the program between military, civil defense and civilian needs, and physicians must accept the role of serving continuously as propagandists for maintenance of blood donations for all of these purposes in all parts of the country. Donated blood must and should be routed in one of four directions: (1) As whole blood for the Armed Services; (2) To plasma processing laboratories to build up plasma reserves for the Department of Defense; (3) To plasma processing laboratories for civil defense, and (4) For continuing daily usage for civilian needs. The need in each of these four directions is pressing and continuous planning and revision of plans will be necessary throughout the program.

As recommended by the American Medical Association in June 1951, physicians and their families should lead the way as blood donors; some medical societies have already promoted this effectively.

Federal Civil Defense Administration: Some of the relatively small funds which have become available to the Federal Civil Defense Administration may be expended for plasma reserves as well as for very important reserves of equipment requisite for large scale bleeding in the event of local disaster. The special technical manual "Civil Defense Blood and Blood Derivatives Program" probably will be published in December and will become generally available. The American Medical Association again urges on all those in authority, both in planning bodies and appropriating bodies, that full consideration be given to all the known needs of the populace in regard to civil defense.

Health Resources Advisory Committee: Under the Office of Defense Mobilization there has been created a Health Resources Advisory Committee, of which Dr. Howard Rusk of New York is chairman. This committee has set up a subcommittee on blood, and your committee is furnishing assistance to both of these committees.

The Office of Defense Mobilization has a large responsibility in respect to the balance in our economy regarding both the needs of the civilian population and of the national defense, including civil defense. This office, headed by Mr. Charles E. Wilson, has responsibilities which are very great and possesses considerable authority under the President of the United States. The programs it plans are of far-reaching significance; in respect to the blood program it has been the duty, as well as the desire, of this committee to offer the maximum assistance which the American Medical Association can render. It is probable that any planning of the Office of Defense Mobilization in this field will be announced at a reasonably early date. It is our belief that such planning could potentially lead to an early solution of many of the problems which have proved vexing.

Other Recommendations: (1) Conservation of Blood: The committee believes that whole blood should be used whenever and wherever there are positive medical indications for its use, and that due consideration should be given, also, to the contra-indications to its employment and to the well known hazards resulting from the use of whole blood. Likewise, physicians should study the indications in which the use of blood fractions would be as good as or even superior to the administration of whole blood fractions, such as plasma, irradiated or dried, packed red cells, resuspended red cells and serum albumen. A physician's obligation to his patient demands the avoidance of the abuse of blood and blood products. From the overall standpoint, the use of blood fractions where indicated will increase the utility of a pint of blood. As more and more laboratories are equipped to fractionate blood it will be less necessary to resort to commercially separated fractions. It is recommended that THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, in the discretion of the Editor, publish suitable articles relating to the indications and contra-indications for the use of blood and blood fractions, the hazards inherent in their use and the medical responsibility for the conservation of blood, a precious human resource available only from the veins of human beings and impossible to produce in any factory.

(2) Blood Replacement: Furnishing of blood without stressing the obligation to replace it leads to a lack of appreciation both on the part of the recipient and too often on the part of the physician ordering the blood of the difficulties involved in getting it in the first place. It is the definite responsibility of every physician ordering the use of blood to see to it that those interested in the patient replace in the bank or collection center the blood which has been used. Blood banks cannot operate unaided, and the cooperation of every physician employing the resources of a blood bank is an essential factor in maintaining its solvency in blood. There is sufficient evidence that too many physicians fail to discharge this responsibility, and it is therefore again called to their attention in order that their patients may never lack for needed blood.

(3) Blood Type Cards: The practice prevailing in many blood banks, including the Red Cross Centers, of furnishing donors with a small card bearing name and blood type should be carried out generally. For every blood donor, for whatever purpose the blood is given, there should be prepared a card which can be furnished to him bearing this blood type information.

(4) Genuine Two-Way Cooperation: Your committee has been working to develop the principle thtat the National Blood Program is a cooperative program of great organizations and that due credit should be given at all times to all participating organizations. Some of the problems which have arisen may be attributed to the tendency of the Red Cross in some places to dominate in administrative and publicity matters to the discouragement of genuine two-way cooperation. Your committee has assisted in the resolution of difficulties such as these in some areas. Your committee recommends that the Red Cross furnish a certificate of participation suitable for display to each cooperating blood bank.

(5) Copies of This Report: Your committee recommends that a copy of this report, after adoption by the House of Delegates, be sent to each of the following: (*a*) The Health Resources Advisory Committee of the Office of Defense Mobilization; (*b*) The Chairman of the Armed Forces Medical Policy Council, Office of Secretary of Defense; (*c*) Director of Health and Special Weapons, Defense Division, Federal Civil Defense Administration; (*d*) Medical Director of the American National Red Cross; (*e*) Chairman of the Special Study Committee for the Blood Program of the American National Red Cross; (*f*) Chairman of the Committee on Blood Banks of the American Hospital Association; (*g*) President of the American Association of Blood Banks, and (*h*) Secretaries of state medical associations and Chairmen of State Committees on Blood Banks.

Respectfully submitted,

LEONARD W. LARSON, Chairman.
HERBERT P. RAMSEY.
JOHN W. GREEN.
JAMES R. REULING.
DEERING G. SMITH.
JAMES Q. GRAVES.
JAMES STEVENSON.
WILLIAM D. STOVALL.

REPORT OF REFERENCE COMMITTEE ON HYGIENE AND PUBLIC HEALTH

Dr. Charles L. Farrell, Chairman, presented the following report, which was adopted:

Your committee also received the report of the Committee on Blood Banks to the Board of Trustees. Your reference committee heartily commends the Committee on Blood Banks for an excellent report. However, inasmuch as the shortage of qualified personnel is the basic problem in providing inspection and technical advice to blood banks and federal legislation could not possibly correct this deficiency, your reference committee recommends that the last sentence in the next to the last paragraph under the heading "Status of the National Blood Program" be revised to read "It is recommended that consideration be given to methods of providing additional inspection service including the deputizing of state departments of health as inspectors where they possess qualified personnel in this field."

Inasmuch as blood derivatives such as gamma globulin, fibrinogen et cetera are important resources the demand for which is increasing, and human blood is the only source of these essential preventive and therapeutic agents, your reference committee recommends that No. 4 of the recommended uses of human blood be expanded to read: "For continuing daily usage for civilian needs, including fractionation of appropriate blood donations to provide gamma globulin, fibronogen, serum albumen and other essential derivatives."

Inasmuch as the public, as a result of having been educated to the life-saving value of blood, on occasion brings pressure on the physician to administer blood where it is not definitely indicated, your reference committee heartily commends the Committee on Blood Banks for its forthright statement regarding the conservation of blood, the necessity for its replacement and the physician's obligation to avoid abuse of blood and blood products. The committee recommends the adoption of the report of the Committee on Blood Banks as amended.

Report of Special Committee of House of Delegates to Review Organizational Structure of the Standing Committees of the House

Dr. Robertson Ward, Chairman, presented the following report, which was referred to the Reference Committee on Miscellaneous Business:

At the June 1951 session of this House of Delegates, a supplementary report of the Board of Trustees concerning a change in composition of the Council on Medical Service was considered by the Reference Committee on Amendments to the Constitution and By-Laws. That reference committee reported a substitute resolution to the House of Delegates, which was adopted:

"That a special committee of the House of Delegates be appointed by the Speaker to review the organizational structure of the standing committees of the House of Delegates, especially in their relation to the Board of Trustees, and report to the House of Delegates at the next interim session in Los Angeles."

Pursuant to that resolution, the Speaker of the House of Delegates appointed a committee composed of Drs. Warren W. Furey, Chicago; James R. Reuling, Bayside, N. Y.; George A. Unfug, Pueblo, Colo.; Edgar V. Allen, Rochester, Minn.; Harold B. Gardner, Pittsburgh; George F. Lull, Chicago; John W. Cline, San Francisco, and Robertson Ward, San Francisco, as Chairman.

The committee has made a careful study through extensive correspondence and personal interviews of the attitudes and opinions of the members of the Standing Committees, subcommittees of the Standing Committees, members of the headquarters staff and the Board of Trustees, and, on the basis of this study, presents the following conclusions and recommendations:

CONCLUSIONS

1. An organization cannot function effectively unless it has one individual as its responsible executive officer, who delegates junior executive authority to staff employees assigned to various councils and committees. The Board of Trustees of the American Medical Association should be responsible to the House of Delegates and the membership for all activities of the Association, and there should be no boards, commissions or councils within the Association having equal status with the Board of Trustees or a status independent of the Board. When the lines of authority

are clearly established through the responsible executive officer to the Board of Trustees and the House of Delegates, confusion and uncertainty are eliminated and personnel morale improved.

2. The Constitution and By-Laws of the American Medical Association clearly provide for a Board of Trustees with adequate executive authority and power to direct the affairs and activities of the Association between meetings of the House of Delegates. Article 8 of the Constitution reads:

"The Board of Trustees shall have charge of the property and financial affairs of the Association and shall perform such duties as are prescribed by law governing directors of corporations or as may be prescribed in the By-Laws."

Under the By-Laws, "Chapter X.—Committees of the House of Delegates Section 3. Relation of Board of Trustees to Committees," the Board of Trustees is given definitive and unequivocal authority with respect to these committees. This Section reads:

"Committees that function during the interval beween sessions of the House shall be under the direction of the Board of Trustees."

3. This committee believes that there has been some misunderstanding on the part of both the Standing Committees of the House of Delegates and the Board of Trustees with respect to their relationship and proper lines of communication. It is apparent that the Board of Trustees has been reluctant to interpret literally the provisions of Section 3, Chapter X of the By-Laws because of a feeling that it might be overstepping its authority. It is also obvious that in some instances a Standing Committee of the House of Delegates has interpreted that status to mean that the Board of Trustees had relatively little control over its activities.

4. It is apparent that the programs of the Standing Committees are at times not given sufficient publicity in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION so that many members are not aware of the work being accomplished.

5. A member of the Trustees serves ex officio as one of the members of the Standing Committees. In this capacity he is forced to vote both with the Standing Committee and with the Board and thus is placed in the position of plaintiff and judge.

6. During the course of its investigation, your special committee has observed that only the Board of Trustees is limited in its terms of office. It believes that the policy embodied by the limitation of terms of office is sound, since it prevents a self-perpetuating small group from dominating a committee.

RECOMMENDATIONS

1. That this House of Delegates express its appreciation to the Board of Trustees for the general excellence of the program being developed under its direction, and that it direct the Board of Trustees to conduct the affairs of the Association and coordinate all activities of Standing Committees as provided in the Constitution and By-Laws, especially Section 3, Chapter X of the By-Laws quoted above.

2. That differences of opinion that may arise among Standing Committees concerning the scope of their respective areas of activity be resolved by the Board of Trustees.

3. That the programs of the Standing Committees be given adequate publicity in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION by the submission of informative reports from the Standing Committees concerned.

4. That any Trustee member of a Standing Committee of the House of Delegates be ex officio without vote.

5. That a ten year limit be placed on the terms of office of members of Standing Committees of the House of Delegates, to be made retroactive to Jan. 1, 1947.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

The discussion on this report was one of commendation and approval of the recommendations made by the Special Committee. The only question raised in reference to the report had to do with the ten year limit on the terms of office of members of Standing Committees of the House of Delegates. It is the recommendation of your reference committee that this paragraph be changed to read:

"That a limitation similar to that imposed on the Board of Trustees by the By-Laws be placed on the terms of office of members of Standing Committees of the House of Delegates, and that the matter be referred to the Committee on Constitution and By-Laws to make the necessary adjustment."

Your committee recommends approval of the report as a whole, as amended.

Resolution on Honoraria for President and President-Elect

Dr. Julian P. Price, South Carolina, presented the following resolution:

WHEREAS, The positions of President and President-Elect of the American Medical Association have assumed greater and greater importance during recent years; and

WHEREAS, The men who fill these positions are being called on so frequently for addresses and conferences throughout the country that it is taking them away from their personal work for long periods of time; and

WHEREAS, These men are giving this time, without any reimbursement except for the payment of actual expense in travel and sustenance, resulting in a marked reduction in personal income; and

WHEREAS, This has brought about a condition whereby only men who are on a salary or who have extra financial reserves on which to draw are able to accept these positions without a serious financial sacrifice to themselves and their families; and

WHEREAS, Such a condition could deprive the American Medical Association of the services of men whose leadership is needed; and

WHEREAS, It is the custom with certain large institutions to pay their nonsalaried officers a per diem honorarium for time spent on official work away from their personal businesses; and

WHEREAS, It is believed that the vast majority of the members of the Association would be glad to have a small fraction of their dues go toward the payment of such a per diem honorarium to these men who are leading their Association; therefore be it

Resolved, That this House of Delegates of the American Medical Association looks with favor on the payment of a per diem honorarium, in addition to expenses, to the President and President-Elect of the American Medical Association for time spent in the work and activities of the Association while away from their homes, and requests the Board of Trustees to give the matter careful consideration and to put such a plan into effect if feasible.

Resolution on Honorarium for President of American Medical Association

Dr. R. B. Robins, Arkansas, presented the following resolution, which also was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The President of the American Medical Association devotes most of his time to the duties of his office at great financial sacrifice; and

WHEREAS, It is becoming the custom of other large national organizations to compensate their presidents for loss of time from their regular occupations; therefore be it

Resolved, That the House of Delegates instruct the Board of Trustees to grant the President an honorarium of not less than five thousand dollars and not more than ten thousand dollars in addition to the regular per diem and travel allowance.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, submitted the following report, which was adopted:

Two resolutions relating to this same subject were considered. The first was presented by Dr. Julian P. Price, South Carolina, in reference to honoraria for the President and President-Elect, and the second by Dr. R. B. Robins, Arkansas, entitled Honorarium for President of American Medical Association. There was considerable general discussion by a large group. Feeling was expressed that such officers should be given liberal per diem honoraria. Your reference committee approves the liberal per diem allowance and recommends that the amount be left to the discretion of the Board of Trustees. It recommends approval of the resolution presented by Dr. Julian P. Price.

Resolution on Medical Care Insurance on Service Basis for Dependents of Members of Armed Forces

Dr. R. L. Novy, Michigan, presented the following resolution, which was referred to the Reference Committee on Insurance and Medical Service:

WHEREAS, Dependents of members of the Armed Forces at times need medical care under circumstances that involve financial hardships, lack of adequate governmental facilities or both; and

WHEREAS, The physicians of the United States through their sponsored prepayment plans are able to provide care to such dependents on a service basis; and

WHEREAS, Many citizens entering military service already have protected their dependents against costs of illness through voluntary insurance; and

WHEREAS, Blue Shield and other medically sponsored plans enable their members to receive high quality medical care with free choice of physician; and

WHEREAS, Labor and industry generally have recognized that medical insurance benefits for dependents are important in developing better employe morale; now therefore be it

Resolved, That if in the independent judgment of the Department of Defense or Congress the welfare of our preparedness program requires that dependents of members of our Armed Forces receive medical care on a service basis, then the medical profession stands ready to provide such service through Blue Shield and other medical society sponsored plans.

REPORT OF REFERENCE COMMITTEE ON INSURANCE AND MEDICAL SERVICE

Dr. Raymond W. McKeown, Chairman, submitted the following report, which was adopted:

The Michigan delegation presented a Resolution on Medical Care Insurance on Service Basis for Dependents of Members of Armed Forces. After thorough deliberation your committee approved of the Michigan resolution.

Resolution on Fluoridation of Water Supplies

Dr. S. E. Gavin, Wisconsin, presented the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, There is conclusive and acceptable evidence that the ingestion of small amounts of fluorides during the period of tooth enamel formation produces a harder, more caries resistant enamel, thereby substantially and safely reducing the incidence of dental caries; and

WHEREAS, The fluoridation of water is a most effective approach to improving health through the prevention of dental decay and is economically advantageous to the public as well as the individual; and

WHEREAS, The fluoridation of public water supplies is approved and recommended by the American Public Health Association, the United States Public Health Service and the American Dental Association as in the interest of better health; now therefore be it

Resolved, That the House of Delegates of the American Medical Association endorse the principle of fluoridation of all public water supplies that are deficient in fluoride.

REPORT OF REFERENCE COMMITTEE ON HYGIENE AND PUBLIC HEALTH

Dr. Charles L. Farrell, Chairman, submitted the following report, which was adopted:

Your reference committee received two resolutions regarding the fluoridation of water supply, one submitted by Dr. Stanley Osborn of the Section on Preventive and Industrial Medicine and Public Health, and one by Dr. S. E. Gavin for the State Medical Society of Wisconsin. Your committee has heard testimony and reviewed literature on the subject and submits the following resolution as a substitute:

WHEREAS, Carefully controlled studies have demonstrated that fluoridation of water supply has been definitely beneficial in the reduction of dental caries in the younger age group; and

WHEREAS, The Council on Pharmacy and Chemistry has reported that fluoride is nontoxic in community water supplies up to one part per million; and

WHEREAS, The addition of fluoride to community water supplies seems to have merit; therefore be it

Resolved, That the House of Delegates of the American Medical Association endorse the principle of fluoridation of community water supplies.

Resolution on Purchase of Property in Washington

Dr. S. E. Gavin, Wisconsin, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The Washington office of the American Medical Association is recognized as a highly important information and research center serving members of Congress, government officials and agencies, members of the Association and others; and

WHEREAS, The effectiveness of this office would be greatly enhanced by convenient location and appropriate library and research facilities to provide more adequately for study, analysis and reporting in circumstances demonstrating not only the ideals and dignity but the efficiency of the Association; and

WHEREAS, The location and the cost of maintaining desirable rental property will be a continuous problem for the Association; therefore be it

Resolved, That the House of Delegates of the American Medical Association urge the Board of Trustees to purchase suitable property in Washington, D. C., to serve as a permanent headquarters for the Washington office of the Association.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

This matter was discussed and your reference committee, after due consideration, reports support of the resolution in principle but recommends the following changes in the resolution to read as follows:

Resolved, That the House of Delegates of the American Medical Association authorize the Board of Trustees to consider the purchase of suitable property in Washington, D. C., at an opportune time to serve as a permanent headquarters for the Washington office of the Association.

Your committee approves of the resolution as amended.

Resolution on Emergency Seating of Alternate Delegates

Dr. John J. Curley, Massachusetts, submitted the following resolution, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

WHEREAS, The House of Delegates of the American Medical Association has expressed its opinion that all states and territories should be represented at all times in sessions of the House of Delegates; and

WHEREAS, The House of Delegates approved a change in the Constitution and By-Laws of the American Medical Association at its 1951 annual session whereby in emergencies a responsible state officer may designate an alternate to represent a delegate, if such delegate is taken ill or called away from a meeting of the House of Delegates; and

WHEREAS, It is often difficult to get a state officer, namely the President or Secretary of a state or territorial association, to give a written credential to an alternate; and

WHEREAS, Often the President or Secretary of a state or territorial association is not present at the meetings of the House of Delegates; and

WHEREAS, Some state and territorial associations elect a specific alternate for each delegate to the meetings of the House of Delegates; therefore be it

Resolved, That in case of emergency as designated by the House of Delegates and in case a responsible officer of a state or territorial medical association cannot give written credentials to an alternate of that state or territorial medical association, a majority of the delegates of such state or territorial medical association shall be allowed to designate any duly elected alternate to represent that state or territorial medical association for the remainder of the meeting of the House of Delegates. In the states or territories where one to three represent the above mentioned associations, the single member or the two remaining members shall be permitted to choose the alternate to represent their state or territory if a responsible state or territorial officer cannot be reached to designate the alternate to represent the absent delegate.

REPORT OF REFERENCE COMMITTEE ON AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Dr. Leo F. Schiff, Chairman, presented the following report, which was adopted:

The resolution presented by Dr. John J. Curley for the Massachusetts delegation, proposes a method of designation of a substitute delegate when, in emergency, the regularly elected delegate or alternate cannot serve and a responsible officer of a constituent state or territorial medical association cannot be reached in time to furnish written credentials for such substitute.

Although an amendment to the By-Laws adopted at the annual session in 1951 would seem to authorize appointment of a delegate for a constituent association under certain emergency conditions, Section 2 of Article 6 of the Constitution states: "The House of Delegates is composed of delegates *duly elected* by the constituent associations. . . ." In the opinion of your committee, the action requested cannot be taken without amendment of the Constitution. Further, your committee believes that the third paragraph of Section 1 (D) of Chapter IX of the By-Laws is not in accordance with the Constitution, and therefore recommends that the resolution be referred to the standing Committee on Constitution and By-Laws and, further, that that committee be requested to review Section 1 (D) of Chapter IX of the By-Laws in reference to its constitutionality.

Resolution on Fluoridation of Public Water Supplies

Dr. Stanley H. Osborn, Section on Preventive and Industrial Medicine and Public Health, submitted the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, Accumulated evidence indicates a sound basis for the fluoridation of public water supplies for the control of dental caries; and

WHEREAS, All evidence to date supports this promising preventive dental health measure wherever it has been instituted; therefore be it

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1951

Resolved, That the House of Delegates of the American Medical Association approve the fluoridation of public water supplies as a safe, economical and effective method of reducing the prevalence of dental caries of the people.

The report of the Reference Committee on Hygiene and Public Health on the above resolution will be found following the Resolution on Fluoridation of Water Supplies presented by Dr. Gavin of Wisconsin on page 1698.

Resolution on Congressional Investigation of the Teaching of Collectivism in Schools

Dr. Eugene F. Hoffman, California, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, There has been some misunderstanding concerning the resolution adopted by the House of Delegates in June 1951, calling for a Congressional investigation of the teaching of collectivism in our schools; be it

Resolved, That the American Medical Association hereby reaffirms its belief in and support of the American public school system as a bulwark of our constitutional republic and that system must exercise its proper function of disciplining and instructing our youth in order that they on the attainment of maturity may assume their rightful positions as responsible and productive citizens; and be it further

Resolved, That the attention of every American is once again directed to the dangerous inroads on our national thinking already achieved by the insidious philosophy of collectivism. Those educators who have seen this danger and are opposing it deserve our hearty commendation and enthusiastic support. Those who have attempted to pervert our school system from its true educational function to that of indoctrination should be relieved of further opportunity to achieve their goals.

Report of Reference Committee on Legislation and Public Relations

Dr. R. B. Robins, Chairman, submitted the following report, which was adopted:

The committee approves of the resolution and recommends its adoption.

Resolution on Death of Dr. James Edgar Paullin

Dr. Eustace A. Allen, Georgia, presented the following resolution, which was adopted by a unanimous rising vote on motion duly made, seconded and carried:

American medicine has been fortunate in having great men as its leaders during the past fifty years. Dr. James Edgar Paullin was among those who did much to elevate the standing of our profession to its present position. His apprenticeship was served with Sir William Osler and the aims and ambitions of his great teacher were emulated throughout his professional career. Dr. Paullin's contributions to medical education, research, national defense and organized medicine will not be surpassed by any one of our time. Integrated with his professional ability was a warm personality which endeared him to all who were associated with him.

To lament the passing of one so great is the usual pattern of such a resolution. More fitting for Dr. Paullin's passing, however, is an expression of gratitude for his years of service to American medicine. He served for many years in the House of Delegates and was President of the American Medical Association in 1943.

Longfellow, with his poetic ability, has well described Dr. Paullin's impact on American medicine in the following lines:

> "So when a great man dies,
> For years beyond our ken
> The light he leaves behind him lies
> Before the paths of men."

The end came as he wished, suddenly, while working among his friends and associates of many years and with his family; therefore be it

Resolved, That the House of Delegates of the American Medical Association wishes to express its feeling of an irreplaceable loss in the death of Dr. James Edgar Paullin on August 13, 1951; and be it further

Resolved, That a copy of these resolutions be forwarded to the family of our deceased friend.

Resolutions on Death of John F. Hayes

Dr. H. G. Hamer, Indiana, presented the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, In the death of John F. Hayes, the medical profession has lost a friend and champion whose wise and valiant efforts on its behalf have entitled him to the lasting gratitude of the profession; and

WHEREAS, The medical profession of the State of Indiana in particular takes special pride in the fact that he was born in this state, and for that reason would like to have the privilege of initiating the action through which a memorial to him may be preserved not only in the records of the Indiana State Medical Association, but also in the records of the American Medical Association; now therefore be it

Resolved, That the permanent records of the Indiana State Medical Association shall include this resolution in which is incorporated the following statement regarding him:

John F. Hayes, whose death occurred on Sept. 17, 1951, leaves an inspiring record of achievements which have made the country, and particularly the medical profession of America, deeply his debtor. He was born in Indiana and graduated from the Indiana Law School in 1898. He expected from his childhood to earn his way in the world and not have it opened out before him because of the fortunes of birth or the favors of gratuitous patronage. He became a competent stenographer and in that capacity was employed by the late Senator Albert J. Beveridge, whose achievements have entitled him also to undying fame as one of the great statesmen and authors of America.

Mr. Hayes was not content to do what was merely within the call of duty of his employment. Beyond the call of only that duty he studied intensively the subjects covered by his stenographic notes. He not only did the manual work of typing, but contributed brilliantly to the very language of such legislation as the Federal Meat Inspection Act, the Tariff Commission Act and child labor legislation.

This country could not function and our liberties be preserved if people were indifferent to politics. It is the means through which self-government is carried on. From 1909 to 1912, Mr. Hayes was the secretary of the Indiana State Republican Committee. Senator James E. Watson of Indiana, on being elected to the Senate in 1916, appointed Mr. Hayes as his secretary, in which position he served until 1935 when he entered into the law practice in Washington, D. C., which he continued until his death.

For many years he was associated with the Bureau of Legal Medicine and Legislation of the American Medical Association, in which position he served with the same quiet, unostentatious efficiency as in every other position he occupied.

The life and work of Mr. Hayes stands as the proof that modesty and contentment with one's own soul's applause may be retained by a person and still that person may render a distinguished political service in America. Senator James Watson said of him, "To the ability and industry of John F. Hayes in the discharge of his duties, I owe much of my success in public life."

The name of John F. Hayes should be cherished in the memory of the medical profession of Indiana and of the whole United States and of all who knew him or may ever read this memorial, as a man who has in quietness and modesty demonstrated, to the inspiration of all, how much may be accomplished through "one man's plain truth to manhood and tained in this resolution; and be it further

Resolved, That the Indiana delegation to the House of Delegates of the American Medical Association be authorized and instructed to present a motion in that House to adopt a resolution to accept and make a part of the records of that Association the memorial to John F. Hayes contained in the resolution; and be it further

Resolved, That a copy of this resolution be sent to his widow, Mrs. Mary Carson Hayes, and to his son, John Hamilton Hayes, with the sympathy and condolence of the members of the Indiana State Medical Association.

Report of Reference Committee on Miscellaneous Business

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

Your reference committee concurs in the sentiments of the Resolution on Death of John F. Hayes and recommends approval of the suggested recording of the memorial.

Resolution on Deferment of Chiropractic Students

Dr. A. S. Giordano, Indiana, submitted the following resolution, which was referred to the Reference Committee on Medical Military Affairs:

WHEREAS, It has been reported that on September 27, 1951, under the Universal Military Training and Service Act, a regulation was promulgated under which students of chiropractic were made deferable on the basis that they were students of a healing art and should be included among deferable students, such as students of engineering, chemistry, medicine, dentistry and other scientific subjects; and

WHEREAS, Other students who are made deferable must be students of recognized schools and colleges maintaining standards of sound educational merit, while no school of chiropractic exists in America that maintains educational standards the equivalent of the standards maintained in the other schools in which deferable students are enrolled; and

WHEREAS, It has been scientifically demonstrated that chiropractic is without merit as a healing art and that no school of chiropractic gives training adequate to prepare any of its students for service useful to mankind as practitioners of any art of healing; and

WHEREAS, Chiropractors, without first acquiring or attempting to acquire adequate preparation in the nature of true scientific study, are continuously engaged in an effort to obtain unmerited recognition in the Armed Forces and the civilian population of the United States as properly trained practitioners of a healing profession and are trying to accomplish their purpose solely through lowering the standards of education and training presently required for such recognition; and

WHEREAS, Heretofore no recognition has been given to chiropractors in the Armed Forces of the United States, and chiropractic services are not used in treating wounds or diseases in the public health services nor in the Armed Forces of the United States; and

WHEREAS, Whatever is done to lower the standards of medical care, either in the Armed Forces or in the civilian population, is against the best interests of the public and for that reason should be vigorously opposed and resisted; and

WHEREAS, Anything that is done by the Government, which may be construed as something in the nature of recognition of merit in chiropractic, will certainly be immediately seized upon and used by chiropractors for propaganda purposes in behalf of their own commercial interests but to the disadvantage of the public; therefore be it

Resolved, That the Indiana State Medical Association hereby protests against any regulation under which students of chiropractic may be deferred on that ground under the Universal Military Training and Service Act; that the association recommends that chiropractic students be eliminated from the groups who are deferable under that law; that the Indiana delegates to the American Medical Association be, and hereby are, instructed to present to the next meeting of the House of Delegates of the American Medical Association a resolution of the same nature as this one and work for its adoption; and be it further

Resolved, That a copy of this resolution be mailed to the President of the American Medical Association and to the presidents of the various state medical association and also to the members of the Senate and House of Representatives from the State of Indiana, to the Surgeon General of the United States, to the Secretary of Defense of the United States and to the President of the United States.

REPORT OF REFERENCE COMMITTEE ON MEDICAL MILITARY AFFAIRS

Dr. H. L. Pearson Jr., Chairman, submitted the following report, which was adopted:

For the resolution presented to the House by the Indiana Delegation pertaining to the deferment of chiropractic students under the Military Training and Service Act your committee presents the following substitute resolution:

WHEREAS, The Universal Military Training and Service Act of 1951, as amended, provides for the possible deferment of students of chiropractic, among others, under the Selective Service System; and

WHEREAS, It has been scientifically demonstrated that chiropractic is without merit as a healing art and that there is no current need in the Armed Forces for graduates of schools offering such instruction; therefore be it

Resolved, That the American Medical Association hereby protest against the promulgation of any regulation by the Selective Service System under which students of chiropractic may be deferred under the Universal Military Training and Service Act of 1951, as amended.

Resolution on Medical Fees

Dr. George Braunlich, Iowa, submitted the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, It is self-evident that to increase medical or hospital fees because a patient is covered by insurance is unfair, discriminatory, inflationary and contrary to fair play; therefore be it

Resolved, That it is unethical for a physician to increase his fee because that fee is to be paid by an insurance company, directly or indirectly.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

This resolution was discussed at length. It is the opinion of the reference committee that the substance of this resolution is already contained in the Principles of Medical Ethics, and it is the feeling of the reference committee that it could be handled readily at the local level by ethics and grievance committees. Your committee, therefore, recommends that the resolution be not adopted.

Resolution on Cancellation of Delinquent Dues

Dr. J. Duffy Hancock, Kentucky, presented the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The American Medical Association has distinguished itself as a guardian of the health and medical welfare of the people and has demonstrated its vigor and effectiveness in the battle against compulsory insurance; and

WHEREAS, It is most desirable that the American Medical Association not only maintain but increase its capacity to carry on the battle against disease, quackery and socialism; and

WHEREAS, Its policy of requiring all members of state medical associations up to and including 1950 to pay 1950 American Medical Association dues of $25.00 before being able to join the American Medical Association in 1951 or any subsequent year arouses resentment on the part of some of the members and has a tendency to reduce its usefulness; and

WHEREAS, This policy not only creates antagonism for the American Medical Association but also generates ill feeling for the state association officers who attempt to collect back American Medical Association dues; and

WHEREAS, This policy is creating much additional and unnecessary work and correspondence for the state medical association officers; therefore be it

Resolved, That the House of Delegates rescind its action and allow and encourage all members in good standing of state medical associations before or during 1950 who did not pay American Medical Association dues in 1950 to join the American Medical Association in 1951 or subsequent years without penalty or prejudice.

REPORT OF REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

The implications of this resolution were considered at length and discussed freely by representatives of many state delegations, by officers and by members of the American Medical Association. It is the feeling of your reference committee that blanket remission of dues as contained in the resolution might create further misunderstanding and confusion. Your committee recognizes that a solution of this problem which would permit continuous enlargement of the membership should be encouraged. It therefore recommends a substitute resolution:

Resolved, That the House of Delegates give to the Secretary of the American Medical Association the authority to negotiate with each state organization separately as to the method of correcting misunderstandings which exist relative to the collection of 1950 dues only.

Resolution on Blue Cross Benefits for Use of Physicians' Office Facilities

Dr. J. Duffy Hancock, Kentucky, submitted the following resolution which was referred to the Reference Committee on Insurance and Medical Service:

WHEREAS, Blue Cross hospitalization insurance plans are usually limited by enabling acts to pay benefits to hospitals only; and

WHEREAS, It appears desirable from both an economic and public service aspect that such plans should pay benefits when subscribers make use of physical facilities and supplies in a physician's office in lieu of being admitted to a participating hospital where similar facilities are available; and

WHEREAS, Many medical services for which subscribers now request admission to a hospital could be equally well rendered in a physician's office with consequent reduction in the total claim against Blue Cross; and

WHEREAS, In many areas additional costs are incurred transporting the patient to a hospital when the emergency care could more properly and efficiently be rendered in a local physician's office; and

WHEREAS, Revisions in Blue Cross policies to provide for payment to physicians for use of their own office facilities, equipment and supplies only, not including professional services, which may be covered under Blue Shield plans, would result in a savings to Blue Cross plans and a resultant conservation of the funds available for benefits of their insured; now therefore be it

Resolved, That this House of Delegates instruct its Council on Medical Service to confer with the Blue Cross Commission in an endeavor to effect a revision in Blue Cross plans that will provide for payment to physicians for use of their facilities, but not services, when such facilities are used in lieu of hospital facilities under an agreed fee schedule.

REPORT OF REFERENCE COMMITTEE ON INSURANCE AND MEDICAL SERVICE

Dr. Raymond M. McKeown, Chairman, presented the following report, which was adopted:

The resolution introduced by the delegate from Kentucky was most thoroughly discussed. The substance of the Kentucky resolution namely, interrelationships between Blue Cross and Blue Shield, is of deep interest and concern to all physicians over the country. However, it was felt by your committee that there exists procedural technic by which these differences can be settled at the state level. It was further felt that through a strongly united medical profession such problems as existed here could readily be cleared. The resolution from Kentucky was not approved.

Resolution on Medical Care of Veterans

Dr. James Z. Appel, Pennsylvania, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The American Medical Association has welcomed the opportunity to contribute to the medical care of veterans through the medium of the Veterans Administration hospitals within the nation, wishing to do its share in assuring the finest care to all who have sustained disability or illness in defense of their country; and

WHEREAS, Proper and amicable relationship of the doctors of the nation with the Veterans Administration is essential for the provision of such first quality care to patients in these institutions; and

WHEREAS, Blue Shield Plans and other facilities for voluntary prepaid medical care insurance have been established as cooperative enterprises of doctors and the public, and many veterans are subscribers or beneficiaries of such medical care insurance plans; and

V 14
1951

WHEREAS, It is an established fact that in spite of regulations to the contrary, veterans with non-service-connected disabilities and illnesses and who are subscribers or beneficiaries of medical care insurance plans are being hospitalized in Veterans Administration hospitals without valid reference to their obvious ability to finance medical care; therefore be it

Resolved, That this House of Delegates of the American Medical Association instruct the Board of Trustees of the American Medical Association to attempt, through proper channels, to have legislation introduced into the Congress of the United States which would have the effect of canceling the present inequities now permitted under the law and would provide hospitalization, necessary transportation and domiciliary care to all veterans for service-connected disabilities, and for non-service-connected disabilities to render similar care only in those cases of proven inability to pay either by cash or by prepayment insurance.

Resolutions on Use of Veterans' Facilities by Veterans with Non-Service-Connected Disabilities

Dr. James P. Wall, Mississippi, submitted the following resolutions, which also were referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, When the adoption of The American Constitution was under discussion, John Adams, "The Father of the Constitution," uttered this truism: "You have certain rights antecedent to all earthly governments; rights that cannot be repealed or restrained by human legislation; rights derived from the Great Legislator of the Universe"; and

WHEREAS, Among these rights, guaranteed by the Constitution, is the right of appeal and petition; and

WHEREAS, The American citizen is entitled to and demands the privilege to express his views on all matters that affect him and is very reluctant to yield this interest to pressure groups, however well organized, motivated by aggrandizement, nurtured by the long exercise of special privilege; and

WHEREAS, The veterans of our armed services are entitled to the lasting regard of the citizenry, for they have given and been given that we might live and have an abundant life; if such a veteran has suffered a disability because of his term of service, it is agreed by all that it is the solemn obligation of his Government to rehabilitate him as far as possible to his state of comfort and usefulness before his duty with the armed forces; the soldier who on his discharge from duty has no disability, actual or exaggerated, due to his services in the armed forces, is not and should not be the beneficiary of tax money for the relief of illness acquired after a period, when such illness cannot be connected with his term of service in the Armed Forces, because a soldier's patriotism should be for the perpetuation of his Government and not for pecuniary gain; and

WHEREAS, Dependent on the different localities of the Nation, the Veterans Hospitals' beds are occupied by veterans with non-service disability from 66 per cent to 83 per cent of the hospitals' bed capacity; such a veteran's occupancy of such a bed is a form of paternalism or even an entering wedge to the socialization of medicine and should not be tolerated; there are voluntary insurance plans that are adequate to care for the non-service veterans' disability; therefore be it

Resolved, By the House of Delegates of the American Medical Association, in interim session in Los Angeles, California, December 4-7, 1951, that we do whole-heartedly commend the United States Veterans' Administration in its most laudable effort to rehabilitate veterans with service-connected disability, but we strongly deprecate the use of the Veterans' Facilities by veterans without service disabilities; and be it further

Resolved, That a copy of this resolution be forwarded to the proper committee of the Congress that has the consideration of veterans' legislation.

Resolution on Medical Care of Veterans

Dr. C. M. Hamilton, Tennessee, introduced the following resolution, which also was referred to the Reference Committee on Legislation and Public Relations:

Resolved, By the House of Delegates of the American Medical Association that we recommend to the Congress of the United States the adoption of a program of medical and hospital benefits for veterans as follows:

Part 1. That the veterans who require hospitalization for the following types of disabilities be eligible for services in veterans' hospitals:

A. Service-connected disabilities.
B. Tuberculosis.
C. Mental illness.
D. Other forms of chronic illness which require hospitalization for more than ninety days.
E. Disabilities in dispute as to whether service-connected or not.

Part 2.

A. That a standard medical and hospital insurance policy be purchased at government expense for the benefit of every veteran who is unable to pay the premium cost of such coverage.
B. That the insurance coverage embrace disabilities which require hospitalization, excepting those outlined in Part 1, and disabilities which are covered by compensation laws or other forms of public liability.
C. That "the ability to pay" for such insurance coverage be determined on the basis of "the taxable income" of the veteran as determined for federal income tax purposes.
D. That the Congress of the United States determine the income level at which the veterans would cease to be eligible for this benefit.
E. That the insurance policy be written on an annual basis.
F. That the government, through existing agencies, issue checks to eligible veterans which are payable only for purposes of such insurance coverage, and cashable only when signed by the veteran and countersigned by an approved insurance company.

Report of Reference Committee on Legislation and Public Relations

Dr. R. B. Robins, Arkansas, presented the following report, which, after discussion, was adopted:

The resolutions introduced by Dr. J. P. Wall, Mississippi, regarding veterans' facilities for non-service-connected disabilities, the resolution presented by Dr. James Z. Appel, Pennsylvania, regarding medical care of veterans and the resolution presented by Dr. C. M. Hamilton, Tennessee, regarding medical care for veterans, which cover the same basic subject, were read and considered with deep interest, they have been the subject of extensive discussion at the hearings before this committee. Particularly we wish to commend Dr. H. H. Shoulders of Tennessee for the persevering, conscientious, earnest effort he has made toward a solution of the complex problem with which we are faced in dealing with non-service-connected disabilities of veterans and their medical care.

Inasmuch as this problem concerns many groups, such as veterans' organizations, voluntary hospital associations, civilian medical care, voluntary insurance organizations and many others, this committee recommends that the entire problem be referred to the Board of Trustees. It further recommends that the Board, at an early date, create a special committee to consider this complex problem in conference with other groups involved at the top flight or policy making level. Your committee realizes that this is a matter which requires persistent, continuous study, and definitely urges the Board of Trustees to make a report of the activities of the special committee at the June session in Chicago.

Resolutions on Critical Materials

Dr. J. Stanley Kenney, New York, introduced the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, The strength of our nation depends in large measure on the health of the American people, both those in the Armed Forces and those in our vital industrial and agricultural economies; and

WHEREAS, Health and medical services are highly essential activities directly supporting national defense; and

WHEREAS, Manpower available for civilian medical care is decreased in times of national emergency, making hospitals more necessary as a means of extending the available medical skills; and

WHEREAS, The amount of controlled materials provided for proposed new construction projects is insufficient to maintain the necessary level of hospital construction; therefore be it

Resolved, That the American Medical Association urgently requests the establishment of a high degree of priority for materials for construction of hospitals and health facilities and for fabrication of medical equipment and supplies where need can be shown, so that our national health can be properly maintained; and be it further

Resolved, That this resolution be transmitted to the Director of Defense Mobilization.

Report of Reference Committee on Miscellaneous Business

Dr. Warren W. Furey, Chairman, presented the following report, which was adopted:

Your reference committee discussed the contents of the Resolutions on Critical Materials and is in sympathy with the recommendations. It therefore recommends approval of the resolutions.

Resolutions on Deficient Teaching Programs of Dermatology and Syphilology of Some Medical Schools

Dr. Everett C. Fox, Section on Dermatology and Syphilology, introduced the following resolutions, which were referred to the Reference Committee on Medical Education and Hospitals:

WHEREAS, The American Medical Association is interested in well-trained general practitioners of medicine; and

WHEREAS, Dermatology and syphilology constitute a large segment of the practice of medicine as a whole; and

WHEREAS, Eight per cent of all admissions to military hospitals during World War II were dermatologic patients; and

WHEREAS, Twelve to fifteen per cent of all questions in Queries and Minor Notes in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION pertain to dermatology and syphilology; and

WHEREAS, It has come to the attention of this Section that there is a wide disparity in regard to the allotment of time devoted to the teaching of dermatology and syphilology, verging almost to complete neglect in some medical colleges; therefore be it

Resolved, That the Section on Dermatology and Syphilology of the American Medical Association deplores the deficient teaching programs of dermatology and syphilology of some medical schools; and be it further

Resolved, That this resolution be brought to the attention of the House of Delegates of the American Medical Association, the Board of Trustees, the Council on Medical Education and Hospitals and the Special Committee on Medical Education.

Report of Reference Committee on Medical Education and Hospitals

Dr. Joseph D. McCarthy, Chairman, submitted the following report, which was adopted:

The Council on Medical Education and Hospitals has requested that these resolutions be turned over to the Council so that the recommendations contained therein may be put in force. Your committee recommends the adoption of these resolutions.

Resolution on Approval of Internships

Dr. W. W. Baum, Oregon, read a Resolution on Approval of Internships (see THE JOURNAL, Nov. 24, 1951, page 1241), which was referred to the Reference Committee on Medical Education and Hospitals.

The report of the reference committee will be found in the third paragraph under the sideheading "Graduate Training" following the report and supplementary report of the Council on Medical Education and Hospitals on page 1689.

Resolutions on Proposed Amendment to By-Laws to Include General Practitioner Award

Dr. John F. Burton, Oklahoma, introduced the following resolutions, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws:

WHEREAS, The American Medical Association since 1948 has selected a "General Practitioner of the Year" and made an appropriate presentation to him; and

WHEREAS, This presentation has been a fitting and proper tribute to the general practitioner of the year and through him a tribute to the dedication to mankind of the members of the medical profession; and

WHEREAS, This recognition by the American Medical Association of the very real contributions of general practitioners to the health of the people of this Nation has inured to the benefit of the people and the profession; therefore be it

Resolved, That Division Three of the By-Laws be and is hereby amended by the insertion after the present Chapter XV, of the following words and figures which shall be designated Chapter XVI.

"CHAPTER XVI.—GENERAL PRACTITIONER'S AWARD

"Section 1. BOARD TO ESTABLISH AWARD.—The Board of Trustees shall prepare and arrange for the presentation annually, at the Clinical Session, of a suitable General Practitioner's Award of the American Medical Association, to a Member of the Association selected by the House of Delegates as General Practitioner of the Year in accordance with such procedure as the House of Delegates may prescribe."; and be it further

Resolved, That present chapters in Division Four be renumbered as Chapters XVII, XVIII, XIX and XX consecutively.

Report of Reference Committee on Amendments to the Constitution and By-Laws

Dr. Leo F. Schiff, Chairman, presented the following report, which was adopted:

The resolutions presented by Dr. John F. Burton, Oklahoma, propose an amendment to Division Three of the By-Laws to provide for the annual presentation of a General Practitioner Award. Your committee feels that it is inadvisable at this time to amend the By-Laws for this purpose. This award was established by action of the House of Delegates and has been continued each year. The authority given by this action of the House is sufficient to continue the practice so long as it may seem advisable. Your committee therefore recommends that these resolutions be not adopted.

Resolution on Place of Interim Sessions of House of Delegates

Dr. George A. Woodhouse, Ohio, presented the following resolution which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, It has been customary for the House of Delegates to hold its interim session during the clinical session of the American Medical Association; and

WHEREAS, This has required excessive travel on the part of many delegates who seldom have time to attend the clinical sessions; and

WHEREAS, This requires travel on the part of many members of the staff of the Chicago office of the American Medical Association to some distant city and the shipment of many records and supplies from Chicago, entailing considerable expense to the Association; therefore be it

Resolved, That the present plan of holding the annual clinical session of the American Medical Association at various geographical centers throughout the country should be continued, but the annual interim session of the House of Delegates should not be held at the time and place of the clinical session as it would be more practical for the House of Delegates to hold its interim business session in the city of Chicago, preferably during the month of December.

Report of Reference Committee on Miscellaneous Business

Dr. Warren W. Furey, Chairman, submitted the following report, which was adopted:

There was considerable free discussion of the advantages and disadvantages of the clinical session and the concurrent meeting of the House of Delegates. The reference committee understands that the Council on Scientific Assembly is now studying the problem. It is the feeling of the committee that the Council should further study the problem, considering the necessity of delegates and officers coming to both meetings, of the finances involved and the travel difficulties encountered. Your committee, therefore, recommends no action at this time.

Resolutions on Health Problems of the Older Worker

Dr. Donald Cass, California, introduced the following resolutions, which were referred to the Reference Committee on Industrial Health:

WHEREAS, Manpower requirements for defense industry have necessitated the employment of many older age workers; and

WHEREAS, Prolongation of life induces an aging population with changing demands for health, employment and retirement; and

WHEREAS, These trends strongly influence future demands on the medical profession in general and occupational medicine in particular; therefore be it

Resolved, That the Council on Industrial Health extend its interest and activities in the investigation of the health problems of the older workers; and be it further

Resolved, That this project receive essential financial support; and be it further

Resolved, That the Council report its findings to the House at the earliest opportunity.

Report of Reference Committee on Industrial Health

Dr. Millard D. Hill, Chairman, presented the following report, which was adopted:

The committee recommends the adoption of this resolution.

Message from Miss Hattie A. Niehoff

The Speaker informed the House of Delegates regarding a message received from Miss Hattie A. Niehoff, as follows:

Shortly after the conclusion of the June session, I had a very delightful letter from our good friend, Miss Hattie Niehoff. She said that she was quite disturbed and naturally unnerved at the presentation of the purse to her from the members of the House of Delegates and her friends, and she had not formally presented her thanks. She asked me to do that today.

Presentation of General Practitioner's Medal to Dr. A. C. Yoder

Dr. John W. Cline, President, introduced to the House of Delegates Dr. A. C. Yoder, Goshen, Ind., was was elected General Practitioner of the Year by the House on December 4, and presented to him the gold General Practitioner's Medal. Dr. Yoder addressed the House briefly.

Presentation of Citation to Dr. Kellogg Speed

Dr. E. J. McCormick, Trustee and Chairman of the Advisory Committee on Scientific Exhibit, introduced Dr. Kellogg Speed, Chicago, and presented him with a citation for his conduct over the years of the Association's Exhibit on Fractures.

Broadcast by N. B. C.

Dr. Elmer L. Henderson, Past President, announced that the National Broadcasting Company will put on on Sunday, December 9, a thirty minute "live" broadcast of activities of the American Medical Association at the Los Angeles Clinical Session, which will be of no expense whatever to the Association.

The House of Delegates extended a vote of thanks to the National Broadcasting Company for this delightful gesture.

Motions of Appreciation

On motions duly made, seconded and carried, expressions of appreciation were made to the Co-Chairmen of the Local Committee on Arrangements, Drs. J. Walter Scott and J. Lafe Ludwig, the City of Los Angeles, and the local Chamber of Commerce, and a rising vote of thanks was given to the Co-ordinating Committee of the American Medical Association for the splendid public program on the night of Wednesday, Dec. 5, 1951.

V 14
1951

MEDICAL NEWS

CONNECTICUT

Sociologist Appointed to Pediatric Department.—The Yale University School of Medicine has appointed for the first time a sociologist to the staff of its department of pediatrics "to add to the effectiveness of medical care for children." The sociologist, who will hold the rank of research assistant, will actually have a special sociology internship in pediatrics. The appointment, which is supported by the Russell Sage Foundation, is for one year but will be renewable if results are promising. Because the trend of modern knowledge emphasizes the importance of treating the patient as a "whole person" and not merely as a "sick body," it is believed that the effect of the hospital environment on the sick child and on his family needs reevaluation and that the services of a sociologist will be of value.

ILLINOIS

Open State Narcotic Clinics.—The Illinois Department of Public Health has opened two state narcotic clinics in Chicago. The first is located at Provident Hospital on Chicago's South Side, and the second at the University of Illinois Research and Educational Hospitals on the West Side. Another is to be opened on the North Side as specified in an act passed by the last general assembly. These clinics were created primarily for the prevention of drug addiction among Chicago youths and the rehabilitation of addicts who have received treatment elsewhere. Operating expenses are to be underwritten by the state health department, which made an appropriation of $90,000 for setting up the clinics. At Provident Hospital the clinic is staffed by a psychiatrist, a clinical psychologist, a psychiatric social worker, and a field social worker. Dr. Walter A. Adams, head of the psychiatric staff, is director there. It will be conducted as an outpatient center handling about 30 patients weekly, giving such services as psychiatric, psychological, and medical counseling. It will be a source of information to parents who believe their children may be using drugs. The rehabilitation program will consist of counseling and assisting persons discharged from such sources as the U. S. Public Health Service's hospital for narcotic victims at Lexington, Ky., and the Chicago House of Correction.

The Narcotics Research Clinic at the University of Illinois will provide special study and treatment in about 30 selected cases per year to gain some information about the causes that lead adolescents to become drug addicts. Dr. Irene C. Sherman, assistant professor of psychiatry, is director of the clinic.

Chicago

New Infant Station.—The new $192,000, 40-bed infant station at Michael Reese Hospital was dedicated by members of Infants' Aid November 25. Infants' Aid, the women's organization that made possible the first premature infant station of the hospital 29 years ago, is reported to have contributed more than $200,000 to the nursery since its founding.

University Appointments.—Dr. Henrietta M. Herbolsheimer, deputy director of the Illinois Civil Defense Agency, has resigned to join the faculty of the University of Chicago as assistant professor of preventive medicine. Before joining the civil defense staff she had served as medical administrative assistant to Dr. Roland R. Cross, director of the state department of public health.

KENTUCKY

Grants for Heart Research.—Two grants totaling $15,035 have been awarded for heart disease research by the U. S. Public Health Service to the University of Louisville School of Medicine. One grant of $5,635 will be used by Sheppard M. Walker, Ph.D., associate professor of physiology, to investigate the "chemical changes affecting the mechanical and electrical response of muscles," and the other of $9,400 was awarded Dr. Charles A. Woerner, associate professor of anatomy, for research in "the relation of fat metabolism to hardening of arteries."

LOUISIANA

New Surgical Society.—Surgeons of the medical schools of Tulane and Louisiana State universities have organized the New Orleans Surgical Society. Besides conducting scientific meetings, the group will make an annual trip to some other medical center. Officers elected to serve for the ensuing year are Dr. Alton Ochsner, president; Dr. James D. Rives, vice-president; Dr. Samuel A. Romano, treasurer; Dr. Marshall L. Michel, secretary; Dr. H. Reichard Kahle and George Burdette, members-at-large of the board of directors.

MICHIGAN

Research in Hematology.—A three-year grant to the Children's Hospital of Michigan in Detroit has been made by the Playtex Park Research Institute, New York, for the purpose of aiding research in certain phases of hematology. Dr. Julius Rutzky, New York, will carry out investigations in iron metabolism, prevention of iron deficiency anemia, and other hematologic problems under the direction of Dr. Wolfgang W. Zuelzer, director of laboratories for the hospital. Playtex Park Research Institute is a nonprofit, public service foundation sponsored by the International Latex Corporation for the support of research in the field of childhood diseases.

MINNESOTA

Personal.—Dr. Philip S. Hench and Edward C. Kendall, Ph.D., Rochester, were honored at a testimonial dinner November 29 at Coffman Memorial Union, University of Minnesota, Minneapolis. Each was presented with a special citation for distinguished service by the board of regents of the university. The ceremony was planned in conjunction with the nation-wide symposium on rheumatic fever held at the university.

State Rehabilitation Group.—The Minnesota Rehabilitation Association was formed at a recent meeting in Minneapolis to promote the welfare of the handicapped through improvement of standards of professional workers who serve them; encouragement of adequate facilities for treatment, education, and rehabilitation; education of the community to the problems of the handicapped; and sponsorship of programs that advance their welfare. Dr. Russell H. Frost, superintendent of Glen Lake Sanatorium, Oak Terrace, is president of the new group and Alice M. Christian, counselor of handicapped students at the University of Minnesota, is secretary.

NEW JERSEY

Shortage of Nurses Closes One Floor of Hospital.—Shortage of nurses was given as the reason for the announcement November 28 that one floor of the Margaret Hague Maternity Hospital at the medical center in Jersey City would close December 1. The closing would reduce the capacity of the hospital from 350 to 300 beds.

Hospital Unit for Alcoholics.—St. Michael's Hospital in Newark will open the first of the year a six-bed hospital unit for alcoholics. A fee of $85 will be charged for a five-day stay, three of actual treatment and two during which patients will see Alcoholics Anonymous members, who will supervise rehabilitation after patients are released.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

NEW YORK

Personal.—Dr. Harry C. Storrs, Thiells, was honored at the annual luncheon of the Welfare League for Retarded Children November 24, for 40 years of service to the mentally retarded. Dr. Storrs has been associated with Letchworth Village for 21 of those years as senior director. **Letchworth** Village, an institution for the care and treatment of the mentally retarded, has 3,800 patients.

Medical College Appointments.—Dr. William L. Holt, assistant clinical professor of psychiatry at Harvard Medical School and associate in psychiatry at the Boston Psychopathic Hospital, has been appointed professor and director of the department of psychiatry at Albany Medical College and psychiatrist-in-chief to Albany Hospital. Dr. Thomas F. Frawley, formerly research fellow in medicine at Harvard Medical School and assistant in medicine at Peter Bent Brigham Hospital, Boston, has been appointed director of the section of endocrinology and metabolism, a newly created subdivision of the department of medicine. Prior to his Albany appointment, Dr. Frawley was associated with Dr. George W. Thorn at Harvard in studies of adrenal cortical physiology, corticotropin (ACTH), and cortisone.

New York City

Dean for Graduate Studies.—Dr. James E. McCormack has been appointed associate dean for graduate studies and assistant professor of medicine at Columbia University College of Physicians and Surgeons. Dr. McCormack has served in the United States Office of Scientific Research and Development with the Committee on Medical Research, and was executive director in 1948-1950 of the Committee on Medical Science of the Research and Development Board in the Department of Defense. He remains a consultant to the board. Dr. McCormack was associate in medicine at George Washington University in 1948. In 1950 he was appointed associate dean and assistant professor of medicine at the Post-Graduate Medical School of New York University. He has been on the visiting staff of Bellevue and University hospitals.

Home Care Program Saves City Funds.—Public health nurses of the department of health assigned to the home care service program of the city health and hospital departments have saved the city more than $750,000 in the first nine months of this year and have freed 220 beds for acutely ill patients in Queens General and Triboro hospitals, the Bureau of Public Health Nursing reported December 2. Most of the more than 300 patients cared for at home are older persons suffering from heart disease, cancer, and other long-term chronic illnesses. The home care program was inaugurated by the city health and hospital departments in November, 1948. In Queens in the first nine months of this year health department public health nurses made 11,147 home visits to patients who are under medical supervision of the Queens General and Triboro hospitals. Service given saved 51,482 patient-days in Queens General and 17,194 patient-days at Triboro in these months. Care for these patients in the hospitals for this time would have cost the city $801,684.80. The health department budgeted $46,880 for its work in the home care service program, but actually spent less on the program.

OKLAHOMA

Imposter Fined in Federal Court.—Conviction of James Allen Nolen, self-styled "M.D." and operator of Radium Springs Sanitarium, Salina, for shipping misbranded drugs was reported November 18 by the Food and Drug Administration, Federal Security Agency. Found guilty on 20 counts, Nolen was fined $2,000 and placed on a year's probation. The defendant treated patients in his bath house "sanitarium" and sent them home with various types of medicines, some worthless and others dangerous. Among the latter were concoctions containing sulfathiazole and habit-forming drugs, with no warning to protect the patient from injury. It was also brought out at the trial that Nolen instructed diabetics to stop the use of insulin, which he claimed was unnecessary if they took his medicines. As to Nolen's medical status, the U. S. attorney said that the defendant had filed a license which showed the applicant to have been born in 1842, although Nolen is obviously not now 109 years old. He charged that the defendant had filed his father's license four years after the latter had died. He also brought out that the defendant had been denied a license to practice medicine by the Oklahoma State Board of Examiners. This application was based on Nolen's claim that he was licensed in 1906 by the chief of the Cherokee Indians.

PENNSYLVANIA

Plaques for Centenarians.—For the fifth consecutive year the Medical Society of the State of Pennsylvania will present framed testimonials to all residents of the state who attain their 100th birthday during 1952. The testimonial plaques have been presented by officers of the various county medical societies to 167 Pennsylvanians. Relatives, friends, and family doctors are urged to send the names and addresses of Pennsylvanians who will become 100 years old during 1952 to the Medical Society of the State of Pennsylvania, 230 State St., Harrisburg.

Philadelphia

Personals.—Dr. Francis G. Harrison, associate professor of urology, has been promoted to professor of urology and chief of the department at the Graduate School of Medicine, University of Pennsylvania, and urologist at the Graduate Hospital of the University of Pennsylvania.

Hospital Trust Fund.—Jewish Hospital has been awarded a trust fund of nearly $900,000, the income from which is to be used for "some specific purpose" to be determined by the executor and hospital officials, according to the will of Martin Frank, 90-year-old retired manufacturer of children's clothing, who died July 6. In his will Mr. Frank suggested that the money be used by the hospital for the erection of a wing or ward devoted to the treatment of specific diseases or for scientific research. He also bequeathed $500 to endow a room at the hospital in memory of his parents.

Appointments at Jefferson Medical College.—The following appointments at Jefferson Medical College became effective at the beginning of the school year: Dr. David M. Davis became emeritus professor of urology and Dr. Theodore R. Fetter was appointed Nathan Lewis Hatfield Professor of Urology and head of the department; Dr. James R. Martin, emeritus professor of orthopedic surgery, was appointed associate dean of the college, and Dr. Robert Bruce Nye, who has been assistant professor of medicine, became assistant dean. Dr. Martin J. Sokoloff was appointed acting director of the department of diseases of the chest, succeeding Dr. Burgess Lee Gordon, who resigned to accept the presidency of the Woman's Medical College of Philadelphia. Dr. Hobart A. Reimann's resignation as the Magee Professor of Medicine and head of the department of experimental medicine was accepted by the board of trustees, effective October 15.

TEXAS

Child Development Center.—A number of Galveston County and Texas agencies have cooperated to establish the Child Development Center for Galveston County. The new center will have special quarters provided by the Galveston school system. Funds for the initial effort have been given by the Hogg Foundation for Mental Hygiene and by the Galveston County Crippled Children Society. The Child Development Center will be under the direction of Dr. C. Christopher Morris, II, associate professor of pediatrics at the University of Texas Medical Branch, Galveston; Willie M. Verniaud, department of pediatrics of the medical branch, will be clinical psychologist. The Child Development Center will be operated in close coordination with the teaching, research, and service activities of the department of pediatrics of the University of Texas Medical Branch, Galveston, under the general direction of Dr. Arild E. Hansen, chairman. All Galveston County schools are cooperating in the new venture.

V 14
1951

Southwest Texas Medical Assembly.—The International Medical Assembly of Southwest Texas will be held at the Municipal Auditorium in San Antonio, January 22-24, under the presidency of Dr. Thomas H. Sharp, San Antonio. The preliminary program lists the following speakers, most of whom will present at least four papers. Their names and the titles of one of their lectures are as follows:

Richard B. Cattell, Boston, Management of Hyperthyroidism.
Raymond W. McNealy, Chicago, Newer View of Large Bowel Surgery.
Dwight E. Harken, Boston, Recent Developments in Heart Surgery.
Henry L. Bockus, Philadelphia, Some Cardiovascular Gastrointestinal Interrelationships.
H. Marvin Pollard, Ann Arbor, Mich., Management of Upper Gastrointestinal Tract Hemorrhage.
Rolland J. Whitacre, Cleveland, Practical Points in Anesthesia for the Part-Time Practitioner.
Vincente Pardo Castello, Havana, Cuba, My Experience with the Modern Treatment of Syphilis.
John C. Burch, Nashville, Tenn., Urological Injuries in Gynecological Surgery.
Newell W. Philpott, Montreal, Canada, Clinical Management of the Toxic Patient.
Phillips Thygeson, San Jose, Calif., Eye Manifestations of Dermatological Diseases.
Guy A. Caldwell, New Orleans, Minor Injuries of the Lumbar Spine and Coccyx.
Mercer G. Lynch, New Orleans, Causes of Hoarseness.
Malcolm B. Dockerty, Rochester, Minn., Modern Concepts Regarding Carcinoma of the Uterine Cervix.
Malcolm R. Hill, Los Angeles, Precancerous Lesions Encountered in Routine Anorectal Examination.
Edward B. Neuhauser, Boston, Diagnosis and Treatment of Malignant Disease in Children.
George F. Lull, Chicago, What Do I Get for My AMA Dues?
Paul V. Woolley Jr., Detroit, Familiar Problem of "Fever of Unknown Origin."
Lt. Col. Gerald M. McConnell, Washington, D. C., Evaluation of Atomic Weapons Casualties.

The registration fee of $20 may be mailed to the assembly, P. O. Box 2445, San Antonio.

PUERTO RICO

Medical Association Program.—The Medical Association of Puerto Rico held its annual meeting December 12-16 at its headquarters in Santurce, under the presidency of Dr. A. Oliveras-Guerra. Guests of honor included the following physicians: Alton Ochsner, New Orleans; Richard A. Kern, Philadelphia; Walter Freeman, Washington, D. C.; Tinsley R. Harrison, Birmingham, Ala.; Henry G. Poncher, Chicago; Henry J. Tumen, Philadelphia; Meredith F. Campbell, New York; Andrew L. Banyai, Milwaukee; W. Guernsey Frey, Forest Hills, N. Y.; Maurice B. Visscher, Minneapolis; Max P. Cowett, New York; Arthur D. Ecker, New York, and Joe V. Meigs, Boston.

GENERAL

Dr. Brown Wins Dana Medal.—Dr. Edward V. L. Brown of Chicago is the 1951 winner of the Leslie Dana Medal, a national award given annually for outstanding achievement in preventing blindness. Dr. Brown, senior attending ophthalmologist at Presbyterian Hospital, was selected for recognition by the Association for Research in Ophthalmology after being recommended by the National Society for the Prevention of Blindness. The St. Louis Society for the Blind annually awards the medal established in 1925 by Mr. Leslie Dana of St. Louis. The medal was presented to Dr. Brown at a dinner in the Hotel Chase, St. Louis, December 7. Dr. Brown formerly was professor of ophthalmology at both the University of Chicago and the University of Illinois. He is a member of the board of the Illinois Society for the Prevention of Blindness.

Group Psychotherapy Meeting.—The annual conference of the American Group Psychotherapy Association, formerly the American Group Therapy Association, will be held January 4-5 at the Hotel New Yorker in New York under the presidency of Dr. Lewis H. Loeser, Newark, N. J. In addition to papers to be presented, there will be panel discussions Friday on applications of group psychotherapy to prophylaxis, guidance and education; group psychotherapy in private practice, and group psychotherapy in mental hospitals and in child guidance, respectively. At the luncheon meeting on Saturday speakers will be Mrs. Clara Savage Littledale, editor, *Parents Magazine*, New York; Dr. Howard W. Potter, professor of psychiatry, State University of New York College of Medicine, and Dr. Lawson G. Lowrey, associate psychiatrist, Vanderbilt Clinic, Presbyterian Hospital, New York.

International Research Center for Chemical Microbiology.—This center was recently opened in Rome under the direction of Prof. E. B. Chain, F.R.S. It is attached to the Istituto Superiore di Sanità, the chief center for medical research and drug control of the Italian Government. A symposium on bacterial growth and its inhibition was held June 25-30 on this occasion, with the participation of some 20 scientists. The symposium was sponsored jointly by the Istituto Superiore de Sanità, the Council for the Coordination of International Congresses of Medical Sciences, and the World Health Organization. The center, which is recognized by WHO as an international center, will provide international research and training facilities in antibiotics. Its new laboratories contain large-scale pilot plant facilities for the production in substantial amounts of substances of microbiological origin and biochemical interest for research purposes.

Pathology Registry of Nutritional Diseases.—A registry of pathology of nutritional diseases has been established as a unit of the American Registry of Pathology of the Armed Forces Institute of Pathology in Washington, D. C., under the auspices of the Committee on Pathology of the National Research Council. The purpose of the registry is to provide for the accumulation and maintenance of pathologic materials and case records related to nutritional diseases. The registry will provide consultation service in the field of nutritional pathology and prepare teaching material for loan to qualified students and institutions. The cooperation of all individuals and institutions is invited. The registry has been authorized to receive any documented material sent by physicians, hospitals, laboratories, or other reliable sources. Further information may be secured from Dr. Herbert Pollack, 70 East 77th St., New York, or the Registry for Nutritional Pathology, Armed Forces Institute of Pathology, Washington, D. C.

Congress on Obstetrics and Gynecology.—The Fifth American Congress on Obstetrics and Gynecology will be held in Cincinnati March 31 through April 4 at the Netherland Plaza Hotel, sponsored by the American Committee on Maternal Welfare. More than 100 obstetricians and/or gynecologists are expected to take part in the program. In addition there will be 20 participants in the two public health meetings and more in the nursing section. Arrangements have been made for submission of written questions, either by mail or at the congress. The medical section program is headed by Dr. Woodard D. Beacham, New Orleans, in cooperation with the general program chairman, Dr. Nicholson J. Eastman, Baltimore. Chairman of the public health section is Dr. Herman N. Bundesen, Chicago. Congress registration fees are $5 for members and $10 for nonmembers. Information can be obtained by writing to Mr. Donald F. Richardson, Executive Secretary, American Committee on Maternal Welfare, 116 South Michigan, Chicago 3.

Postgraduate Course in Anesthesiology.—The New England Society of Anesthesiologists has arranged six postgraduate lectures in anesthesiology. The mornings will be devoted to visits to Boston hospitals, followed by roundtable luncheon discussions at the Massachusetts General Hospital at 12:30 p. m. Afternoon lectures will be held in the Bigelow Auditorium of Massachusetts General Hospital at 2 p. m. Fee for the course is $5. Residents and medical students will be admitted without fee. The lectures are as follows:

January 5, Physiology of the Cardiovascular System and Its Relationship to Anesthesia, moderators: Dr. William S. Derrick, Boston, and Dr. John Abajian, Burlington, Vt., Discussion of Cardiac Surgery.
February 2, Physiology of the Respiratory System and Its Relationship to Anesthesia, moderators: Dr. William Martin, Worcester, and Dr. Ruth E. Anderson, Norwich, Conn., Discussion of Pulmonary Surgery.
March 1, Physiology of the Central Nervous System and Its Relationship to Anesthesia, moderators: Dr. Julia G. Arrowood, Boston, and Dr. John R. Lincoln, Portland, Maine. Discussion of Neurosurgery.
April 5, Physiology of the Metabolic System and Its Relationship to Anesthesia—including a discussion of kidney and adrenal surgery, moderators: Dr. Benjamin E. Etsten, Boston, and Dr. M. Gene Black, Holyoke, Mass.
May 3, Gynecology and Obstetrics and Their Relationship to Anesthetic Agents, moderators: Dr. Elihu Saklad, Providence, R. I., and Dr. Richard H. Barrett, Hanover, N. H.

For information address M. Gene Black, M.D., Chairman, Committee on Post Graduate Education, 575 Beech St., Holyoke, Mass.

DEATHS

Aycock, William Lloyd ✙ Boston; born Feb. 25, 1889; University of Louisville (Ky.) Medical Department, 1914; associate professor of preventive medicine and hygiene at Harvard Medical School; formerly on the faculty of Harvard Medical School, Courses for Graduates; for many years in charge of the laboratories and field investigations of the Harvard Infantile Paralysis Commission; on the faculty of the Harvard School of Public Health; at one time professor of tropical medicine at the University of Vermont College of Medicine in Burlington, where he was from 1919 until 1931 director of the research laboratory of the Vermont State Board of Health; instructor in bacteriology at the New York Post-Graduate Medical School and Hospital in New York from 1915 to 1919; during World War I served as officer in charge of a base hospital laboratory and as epidemiologist for the American Expeditionary Forces; member of the Association for the Study of Internal Secretions, American Public Health Association, and the Society of American Bacteriologists; past president of the American Epidemiological Society; died in Boston City Hospital October 24, aged 62, of subarachnoid hemorrhage.

Gibson, Edward Thomas ✙ Kansas City, Mo.; born in Kansas City, Kan., Jan. 17, 1881; University of Kansas School of Medicine, Kansas City, 1912; professor of psychiatry and neurology at his alma mater, where he had been chairman of the department from 1929 to 1947; from 1914 to 1916 taught in the depart of neuropathology and psychiatry at Harvard Medical School in Boston and was assistant physician at Boston Psychopathic Hospital; specialist certified by the American Board of Psychiatry and Neurology; an Associate Fellow of the American Medical Association; one of the founders of the Mental Hygiene Society in Kansas City; member of the American Psychiatric Association, Central Neuropsychiatric Association, Kansas City Academy of Medicine, and Kansas City Southwest Clinical Society; affiliated with Mercy Hospital, of which he had been staff president, St. Luke's, Research, and Neurological hospitals in Kansas City, Mo., and the University of Kansas Medical Center in Kansas City, Kan.; from 1916 to 1920 clinical director and pathologist at Connecticut State Hospital in Middletown; consultant in psychiatry for the U. S. Public Health Service; died October 18, aged 70.

Carter, Harold Robert ✙ Captain, U. S. Army, retired, Denver, born in Battle Creek, Mich., April 11, 1907; College of Medical Evangelists, Los Angeles, 1932; entered the medical corps of the U. S. Army as a first lieutenant in August, 1937, and retired in October, 1942; certified by the National Board of Medical Examiners; specialist certified by the American Board of Psychiatry and Neurology; member of the Central Neuropsychiatric Association, American Psychosomatic Society, American Psychiatric Association, and American Academy of Neurology; fellow of the American College of Physicians; assistant professor of neurology (medicine) at the University of Colorado School of Medicine; affiliated with Denver Orphanage, National Jewish, Presbyterian, St. Luke's, Colorado General, Denver General, and Children's hospitals and Mount Airy Sanitarium; killed in an automobile accident October 28, aged 44.

Milkman, Louis Arthur ✙ Scranton, Pa.; born in 1895; Temple University School of Medicine, Philadelphia, 1919; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; fellow of the American College of Physicians; past president of the Pennsylvania Radiological Society and the Lackawanna County Medical Society; at one time on the faculty of St. Thomas College, now known as the University of Scranton; served during World War I; impartial physician, occupational diseases, Pennsylvania State Department of Labor and Industry, Workmen's Compensation Board; roentgenologist for the Pennsylvania Tuberculosis Clinic; affiliated with Carbondale (Pa.) General Hospital, Clarks Summit (Pa.) State Hospital, West Side Hospital, and Mercy Hospital, where he died October 25, aged 56, of myocardial infarction.

Acker, William F., Monroe, Mich.; Detroit College of Medicine, 1901; member of the American Medical Association; served during World War I; for many years county physician; formerly city physician; served as chief-of-staff at Mercy Hospital; died in the University Hospital, Ann Arbor, November 9, aged 72, of bronchopneumonia.

Asper, Guy Philip, Chambersburg, Pa.; University of Maryland School of Medicine, Baltimore, 1903; formerly associated with the U. S. Public Health Service Reserve; served during World War I; for several years on the staff of the Veterans Administration Facility in Castle Point, N. Y.; died recently, aged 71, of arteriosclerotic heart disease.

Bagnulo, Edmund Gillis, Pittsfield, Mass.; Tufts College Medical School, Boston, 1935; plant physician at General Electric Company; member of the American Medical Association; affiliated with St. Luke's Hospital and Hillcrest Hospital, where he died October 23, aged 42, of carcinoma of the colon.

Blake, James ✙ Hopkins, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; an Associate Fellow of the American Medical Association; served on the staffs of St. Mary's, Eitel, and Maternity hospitals in Minneapolis; died October 28, aged 79, of arteriosclerotic heart disease.

Bowman, Dora Emma, La Grange, Ill.; College of Physicians and Surgeons, Medical Department of Kansas City University, Kansas City, Kan., 1901; died in Iola, Kan., August 30, aged 82, of injuries received in an automobile accident.

Broadbelt, Leedom Richard, Havertown, Pa.; Jefferson Medical College of Philadelphia, 1906; member of the American Medical Association; on the staff of Delaware County Hospital in Drexel Hill October 13, aged 67.

Burger, Harry Ernest, Beloit, Wis.; Northwestern University Medical School, Chicago, 1907; member of the American Medical Association; served during World War I; died July 27, aged 67, of coronary infarct and carcinoma of the hepatic colon with metastases to the lungs.

Clark, Perry Jacob, Powell, Wyo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; served on the staff of Memorial Hospital; died October 10, aged 91, of arteriosclerosis.

Cook, Orrin Simeon ✙ Sacramento, Calif.; University of California Medical School, San Francisco, 1917; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society, Radiological Society of North America, and the American College of Radiology; served during World War II; for 25 years chief radiologist at Mercy Hospital, where he died October 24, aged 59, of carcinoma of the stomach with metastasis.

Corson, Filbert Richard ✙ Atlantic City, N. J.; Medico-Chirurgical College of Philadelphia, 1913; served during World War I; died in Beesleys Point, October 13, aged 61, of cerebral hemorrhage and coronary occlusion.

Crist, Damon Ambrose, Dayton, Ohio; Ohio State University College of Medicine, Columbus, 1917; member of the American Medical Association; died October 7, aged 62, of Banti's disease.

Crocker, Elvis Wayne, Calhoun City, Miss.; University of Tennessee College of Medicine, Memphis, 1940; member of the American Medical Association; served during World War II; killed September 30, aged 42, in an automobile accident.

Cruzen, John Lewis, Barnes City, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1899; member of the American Medical Association; served during World War I; died September 16, aged 75, of carcinoma of the gallbladder and liver.

✙ Indicates Fellow of the American Medical Association.

V 14
1951

DeLong, Charles Alanson, Gary, Ind.; Rush Medical College, Chicago, 1905; member of the American Medical Association; on the staffs of Mercy Hospital and Methodist Hospital, where he died October 23, aged 77, of nephrosclerosis and uremia.

Dickey, Robert Randolph, Minneapolis; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1909; died October 28, aged 68, of cerebral hemorrhage due to hypertension.

Dowd, James Henry, Buffalo; Niagara University Medical Department, Buffalo, 1890; member of the American Medical Association; died October 29, aged 86, of arteriosclerosis.

Dowdy, Thomas Winfield ✙ Oklahoma City; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1912; at one time practiced in Wilson and was past president of the Carter County Medical Society; affiliated with Mercy and Polyclinic hospitals; died in Wesley Hospital October 10, aged 62, of gastrointestinal hemorrhage, peptic ulcer and arteriosclerosis.

Driver, Wilson Eliot, Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1893; fellow of the American College of Surgeons; member of the staff of the Hospital of St. Vincent de Paul and Leigh Memorial Hospital; one of the founders of the Norfolk General Hospital; died October 14, aged 81, of coronary sclerosis.

Duckering, Florence West, St. Petersburg, Fla.; Tufts College Medical School, Boston, 1901; member of the American Medical Association; fellow of the American College of Surgeons; formerly practiced in Boston, where she was consulting surgeon to the New England Hospital for Women and Children; died in Peterboro, N. H., October 25, aged 81, of abdominal carcinomatosis.

Forcey, Charles Budd ✙ Sewickley, Pa.; Jefferson Medical College of Philadelphia, 1910; in 1929 member of the House of Delegates of the American Medical Association; died in Miller Hospital, St. Paul, Minn., October 26, aged 65.

Galbraith, Alexander ✙ Palo Alto, Calif.; Rush Medical College, Chicago, 1899; an Associate Fellow of the American Medical Association; member of the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; served on the staff of the Samuel Merritt Hospital in Oakland; was cited by President Truman for his work with the Selective Service system during World War II; died in Oakland October 13, aged 80.

Gerson, Benjamin Norton, St. Louis; National University of Arts and Sciences Medical Department, St. Louis, 1917; died October 17, aged 68, of hypertension and heart disease.

Gill, John Richard, Lovelock, Nev.; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1900; member of the American Medical Association; served as mayor and as city and county health officer; veteran of the Spanish-American War; formerly associated with the Indian Service; died in Pershing County General Hospital, October 13, aged 77, of heart failure.

Goldman, Louis Charles ✙ Ventnor, N. J.; Jefferson Medical College of Philadelphia, 1909; died in Atlantic City (N. J.) Hospital October 22, aged 65, of brain tumor.

Graham, Thomas Everett, St. Louis; Barnes Medical College, St. Louis, 1904; died in Missouri Baptist Hospital October 13, aged 74, of heart disease.

Gray, Richard Berchmans, Rensselaer, N. Y.; Albany (N. Y.) Medical College, 1910; served as health officer; died October 27, aged 63, of a skull fracture received in an automobile accident.

Grove, Robert Kellogg, Buffalo; Cornell University Medical College, New York, 1899; affiliated with Mercy and Charity Eye, Ear, and Throat Hospital of Erie County; died October 30, aged 76, of cerebral hemorrhage.

Growney, George Moore Jr. ✙ Rochester, N. Y.; University of Buffalo School of Medicine, 1929; served during World War I; on the staff of St. Mary's Hospital; died in Elmira September 29, aged 51, of coronary occlusion.

Halderman, Charles Austin, Tipp City, Ohio; Ohio State University College of Medicine, Columbus, 1910; member of the American Medical Association; served as county health commissioner; for many years member of the county board of health; affiliated with Good Samaritan Hospital and the Miami Valley Hospital in Dayton, where he died October 23, aged 73.

Harney, Earl Lafayette ✙ St. Petersburg, Fla.; Starling-Ohio Medical College, Columbus, 1911; member of the Ohio State Medical Association; died September 27, aged 65, of chronic myocarditis.

Hartzell, Thomas Bradford, Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1894; held a D.D.S. degree; member of the American Medical Association; past president of the American Dental Association; formerly on the faculty of his alma mater and the graduate school; affiliated with Northwestern Hospital; member of the medical section of the National Research Council; died in Jennings Memorial Hospital in Detroit August 26, aged 85, of coronary thrombosis.

Haschec, Walter ✙ Newark, N. J.; Long Island College of Medicine, Brooklyn, 1937; died September 19, aged 41, of portal cirrhosis.

Hays, Hardie Rogers, Jackson, Miss.; Memphis (Tenn.) Hospital Medical College, 1906; member of the American Medical Association; served during World War I; formerly associated with the U S. Public Health Service; for many years member of the county health department; director of the bureau of communicable diseases for the state board of health from 1926 to 1928; on the staff of the Baptist Hospital; died October 22, aged 69.

Heaton, Elbert Ellsworth, Centerville, Iowa; College of Physicians and Surgeons, Keokuk, 1896; died September 4, aged 79, of diabetes mellitus.

Herman, Howard Hunter, Waynesville, Ohio; Cleveland University of Medicine and Surgery, 1897; fellow of the American College of Surgeons; past president of the Montgomery County Medical Society; for many years on the staff of Miami Valley Hospital in Dayton, where he died October 21, aged 79.

Hertzog, Lucy Stone ✙ Chardon, Ohio; Homeopathic Hospital College, Cleveland, 1891; affiliated with Huron Road Hospital in Cleveland, where he died August 12, aged 81, of cerebral hemorrhage.

Higgins, Clarence Bertrand, South Easton, Mass.; Middlesex College of Medicine and Surgery, Cambridge, 1918; served on the staff of Harley Private Hospital in Boston; member of the American Medical Association; died September 20, aged 63.

Hilton, George Libby, Nashua, N. H.; College of Physicians and Surgeons, Baltimore, 1902; practiced in Bangor, where he served as city physician and as a member of the police commission and the board of health; died October 9, aged 75.

Hogan, John Vincent, Niagara Falls, N. Y.; University of Buffalo School of Medicine, 1910; member of the American Medical Association; affiliated with Memorial Hospital and Mount St. Mary's Hospital, where he died October 20, aged 63, of cerebral thrombosis and cirrhosis of the liver.

Honeycutt, Emery Highsmith, Miami, Fla.; Medical College of Virginia, Richmond, 1950; intern, Jackson Memorial Hospital; died in Clinton, N. C., July 13, aged 27, of carcinoma of the abdomen.

Hyde, Ximie Richard, Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1915; member of the American Medical Association; specialist certified by the American Board of Radiology; formerly vice-president of the State Medical Association of Texas; past president and secretary of the Tarrant County Medical Society; member of the Radiological Society of North America and the American College of Radiology; affiliated with City-County Hospital; died recently, aged 58.

Isar, Jakob, Kew Gardens, L. I., N. Y.; Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn, Prussia, Germany, 1915; died recently, aged 61, of arteriosclerotic heart disease.

Keene, Jacob Jay, Brooklyn; Long Island College Hospital, Brooklyn, 1903; died in Adelphi Hospital July 18, aged 80, of congestive heart failure.

Kohlhas, John Joseph ⊕ Buffalo; University of Buffalo School of Medicine, 1912; veteran of the Spanish-American War and World War I; died October 31, aged 67, of lymphosarcoma of the rectum.

Kress, William Jewett ⊕ Spokane, Wash.; Missouri Medical College, St. Louis, 1894; an Associate Fellow of the American Medical Association; died in the Santa Monica (Calif.) Hospital October 28, aged 78.

Law, Stanley Guy ⊕ Minneapolis; Rush Medical College, Chicago, 1930; member of the American Psychiatric Association and Industrial Medical Association; served during World War II; died near Siren, Wis., September 3, aged 49, of coronary thrombosis.

Lawrence, Watson Angus, Hartsdale, N. Y.; McGill University Faculty of Medicine, Montreal, Canada, 1909; served during World War I; for many years director of obstetrics at St. Agnes Hospital in White Plains; died November 5, aged 73, of heart disease and cirrhosis of the liver.

Lof, Anders Johan Oscar, Denver; University of Denver Medical Department, 1896; member of the American Medical Association; died October 5, aged 84, of hypostatic pneumonia, arteriosclerosis, and fracture of the femur.

Lynch, George David, DeWitt, N. Y.; Syracuse University College of Medicine, 1904; member of the American Medical Association; served as medical examiner for the New York State Department of Labor Compensation Bureau; formerly on the faculty of his alma mater; died October 13, aged 71.

McCoy, Earl Monroe, Central Islip, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1918; member of the American Medical Association; past president of the Suffolk County Medical Society and vice-president of the Long Island Associated Physicians; served during World War I; affiliated with Southside Hospital, where he died November 9, aged 56, of injuries received in an automobile accident.

McCoy, Raymond Howard, Tecumseh, Neb.; University of Nebraska College of Medicine, Omaha, 1948; member of the American Medical Association; served during World War II; died July 3, aged 26, of coronary thrombosis and poliomyelitis.

McNair, John Clement, Handsboro, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1898; at one time county health officer; served during World War I; superintendent of the Natchez (Miss.) Charity Hospital from 1924 to 1928; died October 16, aged 79, of bronchiectasis and cardiovascular disease.

Macy, Otto E., Riverton, Wyo.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; died September 27, aged 80, of coronary thrombosis.

Maguire, Thomas Joseph, Medford, Mass.; Harvard Medical School, Boston, 1907; member of the American Medical Association; school physician and medical inspector for the board of health; on the staff of Lawrence Memorial Hospital; died October 10, aged 73, of uremia.

Marbel, Myer M. ⊕ Chicago; Chicago College of Medicine and Surgery, 1917; on the staff of the American Hospital, where he died November 19, aged 65, of ileus.

Markowitz, Irwin ⊕ Jersey City, N. J.; University and Bellevue Hospital Medical College, New York, 1915; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of Surgeons; served overseas during World War I; on the staff of Christ Hospital and Margaret Hague Maternity Hospital; died October 20, aged 57.

Marshall, William R. ⊕ Aspinwall, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1922; served during World War I; school doctor; formerly on the faculty of the University of Pittsburgh School of Medicine in Pittsburgh, where he was affiliated with Mercy Hospital; died recently in Dunnville, Ont., Canada, aged 54, in a plane crash.

Mitchell, James Creighton, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1890; member of the American Medical Association; served during World War I; died October 25, aged 87, of arteriosclerosis.

Molyneaux, Silas David ⊕ Binghamton, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; fellow of the American College of Surgeons; served during World War I; affiliated with Our Lady of Lourdes Memorial Hospital and Binghamton City Hospital, where he died October 14, aged 72, of myocardial infarction.

Moore, Homer Jackson ⊕ Surgeon, Lieutenant Commander, U. S. Navy, retired, Opa-Locka, Fla.; University of Texas School of Medicine, Galveston, 1941; served during World War II; retired in May, 1949; on the staff of North Dade Hospital; died in Jackson Memorial Hospital, Miami, September 28, aged 40, of peritonitis, hemorrhages, and pancreatic necrosis.

Nelson, Henry Walker ⊕ Ogden, Utah; Rush Medical College, Chicago, 1914; fellow of the American College of Surgeons; past president of the Weber County Medical Society; served during World War I; affiliated with Thomas D. Dee Memorial Hospital and St. Benedict's Hospital; died October 15, aged 69, of arteriosclerosis.

Nixon, Jesse Elsworth, Portland, Ind.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; served as county health officer; died in Jay County Hospital September 21, aged 76, of cerebral hemorrhage.

Peterson, Carl Adrian Rudolf ⊕ New York; Tufts College Medical School, Boston, 1920; on the staffs of the Columbus and St. Clare's hospitals; died October 28, aged 55.

Pillsbury, Edward Andrew ⊕ Frankenmuth, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; veteran of the Spanish-American War; on the associate staffs of St. Luke's, St. Mary's, and Saginaw General hospitals; charter member of the Frankenmuth State Hospital, of which he was a director; died October 9, aged 74.

Seyfarth, Clarence Alexander, Los Angeles; Northwestern University Medical School, Chicago, 1906; died in Methodist Hospital October 21, aged 70, of carcinoma of the liver.

Short, Nathan Green, Chicago; the Hahnemann Medical College and Hospital, Chicago, 1906; for many years a staff member of the city board of health; died in St. Luke's Hospital October 26, aged 76, of injuries received in a fall.

Wade, John Christopher, Oconto, Neb.; Sioux City (Iowa) College of Medicine, 1897; served during World War I; died in Sioux City, Iowa, September 27, aged 81.

Winslow, Benjamin Sabert, New Bedford, Mass. (licensed in Massachusetts in 1902); member of the American Medical Association; on the courtesy staff of St. Luke's Hospital, where he died November 2, aged 74, of coronary occlusion.

Yowell, Joseph William, Duvall, Wash.; University of Louisville (Ky.) School of Medicine, 1929; member of the American Medical Association; died September 21, aged 54, of coronary occlusion.

DIED WHILE IN MILITARY SERVICE

Dillon, Henry Joseph, Denver; University of Colorado School of Medicine, Denver, 1937; member of the American Medical Association; served during World War II; lieutenant colonel in the medical reserve corps of the U. S. Army, served with the 8,040th Army Unit in Nara, Japan, where he died August 14, aged 49, of a hemorrhage following an accident.

V 14
1951

FOREIGN LETTERS

DENMARK

The Hospital Ship "Jutlandia."—With its return to Europe carrying wounded and convalescent soldiers, "Jutlandia" has completed an Odyssey that is Denmark's first official contribution to the United Nations. In his report to the Danish National Red Cross Society, Dr. Hans Tønnesen emphasizes the spirit of teamwork shown by his staff. Surgeons, physicians, psychiatrists, and neurologists set an example in collective action. By the end of June, 1951, some 1,200 casualties had been treated by the hospital ship staff, which had a lighter task than it had expected. It was from time to time free to extend the hospitality of the ship's services to colleagues from hospitals ashore and from other hospital ships, and these meetings provided an opportunity for discussing general principles of treatment and specific cases. Visits from the Americans were particularly important, since it was necessary to fit "Jutlandia" into an organization working smoothly with the fighting line at one end and the hospitals in Tokyo, Yokosuka, and the homeland at the other.

Dr. Tønnesen stresses the importance he has learned to attach to disciplined uniformity in place of undisciplined individualism. It had been feared at the outset that it might be difficult to get physicians from different fields to work harmoniously, but the staff succeeded in achieving a spirit of cooperation. According to the original plan, "Jutlandia" was to receive non-American United Nations contingents from the British Dominions and other countries, but most of the wounded men were Americans. The language differences gave some trouble, particularly Turkish and Greek. Dr. Tønnesen attributes much of the high morale of his patients to the fact that they were cared for by nurses instead of by orderlies. Though the nurses had to live four to each bedroom, they managed to maintain a cheerful spirit at all times. They worked for 8 to 10 hours a day in artificial light and a strenuous atmosphere. From time to time they took excursions ashore, from which they returned with flowers for their patients. At times, when the requirements of the wounded were not pressing, Korean adults and children were given medical treatment on board the ship, which flew the flags of Denmark, of the Red Cross, and of the United Nations.

Cure for Adiposity by Taxation.—At the central hospital in Svendborg, Dr. Bent Krarup and Dr. C. J. Schwensen have undertaken an analytical study of the weight of patients treated in this hospital in 1948 and 1949. After the elimination of 569 patients under the age of 15 and 147 other patients, they were left with 2,429 patients over the age of 15. They were classified according to their ages and weights, and the "normal" weights at different ages were based on the figures of a life insurance company. These life insurance "normals" could not be regarded as the ideal, particularly for elderly persons, being based on average values. So the patients were allowed a 10% margin above these normals before being included among the overweight cases. According to this standard, 310 (12.8%) of the 2,429 patients were overweight. About two-thirds of these patients were over the age of 50. A study of 242 overweight patients showed that on the average each of them had spent nearly five days more in a hospital than the average for all the hospital patients. These 242 patients had been admitted to the hospital for reasons directly or indirectly, partly or entirely, concerned with their obesity. As many as 85 suffered from arthroses, and 141 from some form of heart disease. After discussing the association of adiposity with numerous other morbid conditions and the economic burden it imposes on the community, the authors of this study suggest that it is largely due to the carelessness and thoughtlessness of overweight persons. These persons, they said, should defray some of its cost through taxation on adiposity; those who were overweight would have to pay an extra premium for their insurance.

The items in these letters are contributed by regular correspondents in the various foreign countries.

A Pernicious Anemia Census.—In 1939, Kirk and Geert-Jørgensen attempted a pernicious anemia census in Denmark, whose population is 4 million persons. They calculated that there were about 2,000 patients over the age of 65 in the country. Among 2,079 persons over the age of 60 whose blood they examined, there were 19 cases of pernicious anemia. In 1934 Meulengracht estimated that the number of such cases in Denmark was between 1,000 and 2,000. Dr. Johannes Mosbech has now taken up the same problem with the help of the U. S. Public Health Service. A member of the Institute for Genetics and Biology, University of Copenhagen, Dr. Mosbech has issued a questionnaire on the subject of pernicious anemia to 94 physicians in the county of Odense. All but two answered, giving the number of their pernicious anemia patients under treatment in December, 1950.

The 175 cases thus reported (105 women and 70 men) may be taken to include all the known cases in the county, for these physicians are able to keep in touch with all their patients, because their signatures are necessary for the renewal of prescriptions for pernicious anemia remedies. About one-third of the 175 cases had been diagnosed while the patients were in the hospital, and in 169 cases data were available with regard to the patient's age when the disease was first detected. It was found that the disease began most frequently among women between the ages of 50 and 60 and among men between the ages of 40 and 70. No seasonal variation could be discovered with regard to the time of the year at which the disease was diagnosed.

As far as the county of Odense is concerned, the pernicious anemia rate is put at about 0.1%. This rate increases with age: between the ages of 40 and 60 it is about 0.2%, and between the ages of 60 and 80 it is about 0.3%. If the findings for Odense are applied to the whole of Denmark, there would seem to be, at the present time, about 4,000 patients receiving treatment for pernicious anemia. In Odense alone about 15 new cases are diagnosed every year—a new case for every 10,000 women and for every 15,000 men, and in the whole of Denmark about 300 new cases are diagnosed yearly. Dr. Mosbech, whose study is published in *Ugeskrift for Laeger* for Sept. 27, 1951, concluded: "The present study has shown that in Denmark during the 25 years since treatment was introduced, there must be 4,000 patients who suffer from pernicious anemia and who benefit from the therapeutic advance made by Minot and Murphy."

TURKEY

Drug Addiction in Turkey.—Before World War I drug addiction was rarely encountered. With the influx of Russian refugees in 1919, drug addiction, mostly to cocaine, appeared and spread. During the occupation, 1918-1923, it was difficult to curb illicit traffic in narcotics, and it became necessary to set aside a pavilion for the treatment of drug addicts at the Istanbul-Bakirköy mental hospital.

According to a publication by Prof. Fahreddin Kerim Gökay, formerly of Istanbul University Department of Psychiatry, for many years chief of Bakirköy's 3,000-bed mental hospital, and currently governor and mayor of Istanbul, 1,534 patients, of whom 1,442 were men and 92 were women, were treated for drug addiction between 1940 and 1949. The ages of these patients were 15 to 19 in 7% of the cases, 20 to 34 in 56%, and 35 to 50 in 37%. Seventy-one per cent were addicted to heroin, 7% to hashish, 4% to opium, and 1% to morphine; the remaining 17% were addicted to various other kinds of narcotics. Of these patients 52% were unemployed or transient trades persons, 16% were workmen, 11% technicians, 7% car and truck drivers, 5% prostitutes, 3.5% housewives, 3% civil servants, 1.5% entertainers, and 1% students. Of all these, 32% were chronic drug addicts and 68% had taken drugs regularly for only a short time.

The control of narcotics is the concern jointly of the Ministry of Health and Social Assistance and the Ministry of Agriculture. The cultivation of opium and Cannabis indica is re-

stricted, and the manufacture of heroin and cocaine is prohibited by law. The government controls the sale and export of raw opium. Smuggled narcotics are confiscated, and high fines and severe prison sentences await the offenders. Confiscated narcotics are immediately sealed and forwarded to the Ministry of Health for destruction (by incineration) under the supervision of a special body. Depots of drugs and narcotics, pharmacies, and drug stores are required by law to keep a book of accounts of the narcotics dispensed. The accounts are inspected by officers from the Ministry of Health at intervals. The maximum amount of drugs and narcotics a physician may prescribe is fixed; the daily dose prescribed is not to surpass half the amount of the maximum dose of any drug, and it may not be prescribed for more than five days, with the exception of codeine and ethylmorphine hydrochloride, for which pharmacists need not account. Proprietors of commercial pharmaceutic houses selling narcotics to persons other than pharmacy proprietors, and pharmacists guilty of dispensing narcotics without prescription, or who are guilty of faulty bookkeeping, are fined from £100 to £1,000 and sentenced to prison. Physicians, nurses, sanitary inspectors, midwives, or members of allied professions found guilty of violating the narcotics law are fined from £200 to £1,000 and sentenced to prison for two years; they are sentenced to five years in a penitentiary if death has occurred as a result of the violation. The licenses of those persons are temporarily, or permanently, withdrawn. The government is trying to control illicit production and traffic of narcotics by increasing its staff of officers and cooperating with international bodies for drug control.

Training School for Tuberculosis Nurses.—As a consequence of World War II, tuberculosis is now first in importance among public health problems in Turkey. The Ministry of Health and Social Assistance, in cooperation with the World Health Organization and the Turkish Anti-Tuberculosis Society, endeavors to train medical and health workers in modern antituberculosis methods. The first training school for tuberculosis nurses, with an enrolment of 30 students, was established in 1943, in temporary premises at the Istanbul Antituberculosis Society's 200-bed Istanbul-Erenköy Sanatorium. The training course was two years. As the Ministry of Health and Social Assistance had in recent years added 2,000 beds for tuberculous patients in its hospitals and sanatoriums, the need for more tuberculosis nurses became apparent. The new school building for the training of tuberculosis hospital and visiting nurses, with an enrolment of 100 students, was recently opened in ceremonies attended by the Minister of Health, Prof. Ekrem Hayri Üstündag, and Antituberculosis Association President Prof. Tevfik Saglam, Dr. Étienne Berthet, tuberculosis consultant of the WHO, and other prominent tuberculosis workers. The theoretical and practical course now takes three years; board, maintenance, and tuition are free; among the teaching staff are American and specialist nurses. The students study at the expense of either the Ministry of Health or the Antituberculosis Society and must work for a period of five years after termination of the course in the respective hospitals or institutions. After this period they must still continue in this branch of nursing.

ECUADOR

National Antimalarial Campaign in Ecuador.—As in other tropical countries, in Ecuador the incidence of malaria has been great. Moreover, malaria has been distributed solely through the lowlands: the coast, certain subtropical valleys, and to a lesser extent in the eastern zone, which forms part of the Amazon basin. The mountain zone, in which, owing to its favorable climate, the greater percentage of persons is found, has always been exempt from malaria, because the carrier mosquito, the Anopheles, can not adapt to the temperate climate of the mountains. However, the most important region, from an economic point of view, is the coast, where the majority of the exportable items and commodities are produced, such as rice, cacao, rubber, bananas, and balsa wood. In this region, according to mortality statistics, more than 10% of the deaths were caused by malaria. Thus, the number of those affected by the parasites must have been extremely large. More than 50% of the agricultural workers of the coast either were sick or had been sick with malaria, which reduced their output to such an extent that the national economy was affected.

These considerations led the National Congress to study a plan for a systematic campaign designed to eradicate malaria in Ecuador, and for this purpose it passed a law that was put into effect in 1949. This national campaign was directed by the eminent epidemiologist Dr. Juan Antonio Montalván, who had, a short time before, carried on specialized studies in the United States. The campaign was planned for completion in three years, and its purpose was to destroy the infected mosquitoes and introduce control of the patients with malaria, so that, within that period of time, the disease would be eradicated. The antimalarial campaign, which has proceeded according to plan, has consisted essentially of spraying with D. D. T., at six month intervals, all the houses and habitations in all malaria-infested places. In addition, the appropriate controls have been instituted over malarial patients. The first general spraying with D. D. T. took place at the end of 1949 and reached approximately 80% of the dwellings in malaria-infested places; that is, 32,000 urban houses and 71,500 rural houses, with a total of more than 25 million square meters, which were sprayed with solutions and powders of D. D. T. and gamma benzene hexachloride ("gammexane") (this last insecticide in small proportion). This treatment reached 700,000 inhabitants in the cities and in the rural regions. The subsequent treatments with D. D. T. reached an even greater percentage of houses. The spraying with D. D. T., which in the first general treatment had been carried out only to the height of 11 ft. on walls that were higher than that, was in subsequent treatments carried out completely, including the roofs and subfoundations. In accordance with the original intention, the antimalarial campaign is drawing to an end; nevertheless, an extension will be necessary for some time to control any possible focus of infection that may appear in the future.

The results of the campaign have been most interesting and effective. The relevant statistics disclose an abrupt diminution in the incidence of malaria, beginning with the start of this campaign and a progressive diminution during the last two years, showing a tendency to fall to zero. The greatest contrast is observed on comparing the statistics before 1949 with those following the first general treatment with D. D. T. Thus, for example, in investigations prior to treatment with D. D. T., it was found that during the period of malarial transmission, that is, from December to May, 22% of the samples, chosen at random, contained plasmodia; while, in 18,300 samples, also chosen at random but after the D. D. T. treatment, only 2.2% of parasitic infection was found. In another investigation carried out at the Dispensario Infantil of Guayaquil, where the incidence of malaria was great, after the treatment with D. D. T. it was found that out of 2,778 blood samples, only 29 (1.04%) contained the malarial parasites. In the Luis Vernaza Hospital of Guayaquil, where the majority of the patients, not only from the city, but also from most of the coast, are concentrated, a diminution in the incidence of malaria was recorded amounting to approximately 80%, and, in the supposed malaria patients who were being treated at that hospital, the reduction was 93%. This diminution of morbidity due to malaria has been progressing during 1950 and 1951, and the directors of the campaign hope to be able to eradicate definitively this terrible disease, which has prevented wider colonization of the fertile regions of the coast. At the same time, the cost of the campaign has been relatively low, if it is compared with the cost incurred in similar operations in other countries. Treatment with D. D. T. has cost 0.10 sucres per square meter and 3.65 sucres per person (one dollar equals 15.15 sucres); this low cost is due to cheap labor and to the good organization of the campaign.

Personal.—Dr. Teodoro Salguero was elected dean of the Faculty of Medicine of the Central University of Quito. Dr. Salguero recently studied at the University of Michigan under the auspices of the Kellogg Foundation.

V 14
1951

CORRESPONDENCE

STUDENT AMERICAN MEDICAL ASSOCIATION

To the Editor:—Every doctor who takes a long-range view of American medicine should regard the formation of the Student American Medical Association with a sigh of relief. In the present floodtide of bureaucratic socialism, it can become one of the strongest sections of our dike against further governmental encroachments. It can also become an important medium for bringing the student into closer contact with the multitudinous problems he will encounter once he has entered into his own private practice.

On a national scale, this move has been long overdue. For too long a time, the medical student has been pushed straight from the classroom into the complicated maze of legal, financial, and ethical problems which confront the physician hanging out his shingle for the first time. By making the solutions to these problems part of his extracurricular education, we are helping the student to step into his practice as an oriented, well-adjusted person and as a genuine asset to his profession.

On a local level, I had anticipated this need as far back as 1938, when I sponsored the organization of the Student Medical Association at the College of Medical Evangelists in Los Angeles. For the past 13 years, this exceedingly active group has benefited socially and intellectually by its bimonthly meetings, which present the best speakers in a multitude of fields. Apart from learning of the latest advances in surgery, orthopedics, dermatology, and other fields, they learn how to invest their future profits for the greatest financial return, how to combat the dishonest patient, how to ethically and legally collect delinquent bills, how to play an important role in the combating of narcotic addiction, and how to manage many situations that will better enable the student to serve himself and his commmunity in the most advantageous manner.

Medicine has a tremendous variety of functions, of which the constant fight against socialized medicine is only a part. We believe in improvement of medical care and the furtherance of the art and science of medicine. It is therefore up to us to furnish that connecting tie between organized medicine and the embryo physician to insure that he is familiar with medical life's general, over-all picture.

If it accomplishes nothing more, the S. A. M. A. will be exceedingly worth while in proving to the student that the American Medical Association is not an autocratic power—as he is too often led to believe—but rather a very democratic organization whose affairs are handled by elected representatives from their various districts. Its meetings are open and above board. All of its actions are intended to be for the best interests of the doctors whom it serves.

We should take it on ourselves to insure that members of this new organization have an opportunity to see for themselves what goes on in A. M. A. headquarters. They should know that each branch, each bureau, each officer has for its objective something for the advancement of the medical profession or the advancement of the American people's health.

It is never too soon to start educating the medical student in the American way of life. With the proper guidance, these students can and will make a significant contribution to their own best interests, as well as to that of the practicing physician.

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DEATH FOLLOWING CORTICOTROPIN (ACTH) THERAPY

To the Editor:—In the editorial "Postpartum Necrosis of the Pituitary" (*J. A. M. A.* **146**:653 [June 16] 1951), the statement is made that the role of corticotropin and cortisone in the treatment of pituitary insufficiency has not been determined. I know of the death of a 43-year-old white woman with Sheehan's disease 24 hours after the injection of 25 mg. of corticotropin. It raises the question of whether the injection of corticotropin, stimulating a dangerously depleted adrenal gland, might not be sufficient to bring about complete adrenal exhaustion with adrenal crisis and death.

This patient, in whom signs of pituitary insufficiency had developed after the birth of twins, 10 years earlier, was admitted to the hospital with high fever, sore throat, nausea, and vomiting. She improved with penicillin and supportive therapy. On the third hospital day she was given 25 mg. of corticotropin. The eosinophil count fell from 125 per cubic millimeter to 95 per cubic millimeter in four hours. The following morning she was found dead in bed. Autopsy revealed marked atrophy of the adrenals, thyroid, ovaries, and uterus. The cut surface of the pituitary gland revealed a large amount of fibrous tissue replacement.

The presence of long-standing anterior pituitary and secondary adrenal hypofunction appears to be well established by the clinical and pathological findings. In addition, the factor of the septic sore throat in bringing about further adrenal exhaustion is to be noted. If similar cases are reported, the danger of the use of corticotropin should be pointed out.

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LOSS OF HAIR FOLLOWING PROPYLTHIOURACIL THERAPY

To the Editor:—At the instance of Dr. Morris Wilburne, I am submitting a statement on hair loss and pigmentation following the use of propylthiouracil. This occurred in a white man, 32, whose pretreatment basal metabolic rate was +51% and whose blood sugar curve showed diabetes mellitus with glycosuria (4+) in the fasting specimen. The height of the sugar curve one hour after administration of oral glucose was 600 mg. per 100 cc., with no return to the base line after three hours. He was underweight, the weight being 120 lb. and the height 68 in. The blood pressure was 130/80, the pulse rate varied from 96 to 133, and he had a bilateral nodular adenomatous goiter. He was given propylthiouracil, 100 mg. three times daily, in conjunction with strong iodine (Lugol's) solution, 4 minims (0.246 cc.) daily, and a diabetic regimen. Within two months, he noticed that his hair, beard, eyebrows, and lashes were rapidly falling out. One month later, his beard began to return, but it was noticed that, whereas the color had been a light brown, it was now white. At this time, the basal metabolic rate was +20%, the weight had increased to 134 lb., and the pulse rate was 96. He was sugar free. At this stage, the propylthiouracil was increased to 400 mg. daily, and the iodine solution to 8 minims (0.493 cc.). The fasting blood sugar was 122 mg. per 100 cc.

He had a first-stage (left lobe) thyroidectomy in May, five months after his first office treatment; the second stage resection of the right lobe was done two months later. During the period of hospitalization, and during other brief periods when the propylthiouracil was omitted, there was noted a temporary return of hair growth, but always the return was white.

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MISSPELLING OF NAME SCHEFFEY

To the Editor:—I wish to call your attention to the misspelling of my name as Chief of Service in Obstetrics and Gynecology at Jefferson Medical College Hospital, as noted on page 423 of THE JOURNAL, Sept. 29, 1951, relating to approved residencies.

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MEDICAL MOTION PICTURES

Activity for Schizophrenia: 16 mm., black and white, sound, showing time 20 min. Produced in 1950 for the Department of Medicine and Surgery by and procurable on loan from Presentation Division, Veterans Administration, Washington 25, D. C.

This film describes dramatically the employment of corrective therapy in the treatment of schizophrenia. It describes in detail the recovery of one patient from the time of his admission to a psychiatric hospital until the time of his discharge. His suicidal tendencies are overcome, electric shock therapy is administered, and the corrective therapist, under the guidance of the chief of psychiatry and the chief of physical medicine, provides individual and eventually group activities, which lead to abandonment of the suicidal attempts and gradual resocialization. It is mentioned that "corrective therapy is one of the keys which unlocks the prison of the sick mind" and that "physical movement is often the only means of expression for the schizophrenic." It is stressed that faith in the therapist is important. Occupational therapy is added to the therapeutic regimen, the patient is finally transferred from a closed to an open ward, and he starts group games involving increasingly complex social situations. There is a brief reference to the psychotherapy by the psychiatrist which finally leads to better acceptance by the patient of his parents. There is a dramatic first meeting with his parents and increased activity in occupational therapy, manual arts therapy, and the library; finally, the patient, all smiles, wins a baseball game and receives the approbation of the psychiatrist.

Despite the fine acting, good photography, and sustained drama, this film is misleading because it presents such a distorted view of the importance of corrective therapy. Specialists in psychiatry and physical medicine, who should play the leading role in the treatment of such patients, and also trained physical therapists and occupational therapists will undoubtedly resent the secondary role assigned to them in the recovery of this patient. Corrective therapists are usually graduates of physical education, with very limited special training in psychiatry and physical medicine. Obviously the faith placed by this patient in the therapist should have been placed in the psychiatrists and the other physicians who administered the medical care. The film is good entertainment but does not present a well-balanced picture of proper therapy for the schizophrenic patient. The photography is excellent, the acting is of a high order, and the script is interesting from start to finish.

Curare: Intocostrin, *d*-Tubocurarine Chloride, Mecostrin: 16 mm., color, sound, showing time 25 minutes. Produced by Billy Burke Productions, Hollywood, for and procurable on loan from E. R. Squibb & Sons, 745 Fifth Ave., New York 22.

This report type film is designed to demonstrate some of the basic pharmacological principles associated with the action of curare and to present some examples of its clinical application in surgery. After a repetition of the Claude Bernard experiment on the frog, electromyography is used on a human in order to demonstrate the peripheral action of curare. There are numerous short views of various types of operations, including general surgery and obstetrics, in which curare is employed. The dangers inherent in the use of curarizing drugs are well presented, and the technic of adequate artificial respiration under positive pressure is illustrated. It is candidly and correctly stated that the potential danger in the use of curare is related to lack of understanding of its action rather than to the drug itself.

While this film was not intended as an encyclopedia, it is felt that more stress should be placed on the proper selection and detailed management of patients receiving curare, in order to avoid misuse of the drug and fatalities. Early in the film, during the time that important material is presented by the narrator, the showing of uncorrelated views is distracting.

The simplicity of the technic for the administration of curare, as presented in this film, may mislead the uninformed. Only trained anesthesiologists can safely interpret and evaluate the use of curare as demonstrated, since they have sufficient knowledge of correct anesthetic procedures and safeguards for the administration of this potent drug. The photography and narration are excellent.

Bronchiogenic Carcinoma: 16 mm., color, sound, showing time 20 minutes. Produced in 1951 for the Department of Medicine and Surgery and procurable on loan from Presentation Division, Veterans Administration, Washington 25, D. C.

The stated purpose of this film is "to acquaint general practitioners and medical students with bronchiogenic carcinoma." It discusses rather briefly the high incidence of the disease and the symptoms, diagnosis, and treatment. One case is carried through the steps of diagnosis, surgical removal of the lung, and postoperative care.

Inasmuch as the purpose of the film is to acquaint the general practitioner and the medical student with the clinical picture of the disease, much more time should be spent on this phase of the subject and perhaps less time on the surgical technic, a phase that is more particularly of interest to the thoracic surgeon. The presentation of the clinical and x-ray findings is very limited and is not sufficient to give the viewer a good idea of the various manifestations of the disease. The importance of bronchoscopy as a diagnostic measure is stressed, but no mention is made of the fact that results of bronchoscopic examination are positive in only about 25% of cases. The differential diagnosis of the patient with "virus pneumonia" was omitted, and in the very brief mention of cytology, the cytologic examination of the sputum was not mentioned. The presentation of the operation entails good surgical technic, and the producers avoided the mistake of spending too much time photographing the preparation of the skin and the details of making the exposure. In this case, however, they failed to do what seems essential, namely, to show the location of the incision in the patient's body and to orient the viewer in relation to the patient's body. This film does not fulfill the expectations aroused by the knowledge of those responsible for its production. The color quality of the print submitted for review is not good, thus the various anatomical structures are difficult to identify.

Weight Reduction Through Diet: 16 mm., color, sound, showing time 15 minutes. Sponsored by the National Dairy Council in cooperation with Michigan State College. Produced by the Jam Handy Organization, Detroit. Procurable on loan from the National Dairy Council, 111 North Canal St., Chicago 6.

This film documents a weight reduction study conducted at Michigan State College. It opens with a brief foreword by Frederick J. Stare, M.D., of Harvard University, on the problem of overweight and several scenes that illustrate reasons why an overweight person should and might want to reduce. The remainder of the film is devoted to actual photographs of the persons who took part in the program and a description of how the study was conducted. Cases illustrated include a group of college students whose meals were taken at a training table and a group of non-students who followed their plans at home.

The film is scientifically accurate. It emphasizes the importance of dieting only under the supervision of a physician and illustrates the point that a person can have attractive appetizing meals even though he is on a reducing diet. This film would be of interest mainly to persons exhibiting some interest in dieting, to dieticians and home economists, and to home economics classes in schools. The photography and narration are satisfactory.

Tattooing with Optical Iridectomy in Conical Cornea: 16 mm., color, silent, showing time 15 minutes. Produced by and procurable on loan from Arthur Alexander Knapp, M.D., 907 Fifth Ave., New York, N. Y.

This film begins with 139 ft. of titles which describe the means of restoring vision in eyes with corneal scars and deformities that seriously obstruct vision. Surgical procedures, such as excision of the anterior layers of clouded cornea and iridectomy placed so as to utilize a comparatively clear portion of the cornea, are briefly described. There follows a case history of a patient with keratoconus. The corneal epithelium is abraded, and the central portion of the cornea, to within 3 to 4 mm. of the limbus, is treated with solution which results in dense black staining. An iridectomy done at the limbus above will serve as a pupil, with only slight astigmatism. The surgical dressing consists of a lubricating ointment and a snug bandage. This film is designed to illustrate one method of treating corneal abnormalities that obstruct vision in an otherwise healthy eye. Its application is rather limited. It could be shown to ophthalmologists interested in the author's technic of corneal tattooing but is not recommended as a teaching film. The photography is satisfactory.

V 14
1951

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Internal Medicine, Chicago

88:419-552 (Oct.) 1951

*Follow-Up Study of Therapy in 48 Culturally Proved Cases of Brucellosis: Streptomycin and Sulfadiazine, Aureomycin, and Chloramphenicol (Chloromycetin®). W. W. Spink, W. H. Hall and R. Magoffin.—p. 419.
Changes in Serum Complement During Course and Treatment of Glomerulonephritis. K. Lange, F. Graig, J. Oberman and others.—p. 433.
Comparison of Methods for Determining Sensitivity of Bacteria to Antibiotics in Vitro. G. G. Jackson and M. Finland.—p. 446.
Infection Due to Chromobacteria: Report of 11 Cases. R. P. Wheat, A. Zuckerman and L. A. Rantz.—p. 461.
Bacteremia Due to Gram-Negative Bacilli Other Than the Salmonella: Clinical and Therapeutic Study. B. A. Waisbren.—p. 467.
*Treatment of Pneumococcic Meningitis with Penicillin Compared with Penicillin Plus Aureomycin: Studies Including Observations on Apparent Antagonism Between Penicillin and Aureomycin. M. H. Lepper and H. F. Dowling.—p. 489.
Primary Herpes Simplex Virus Infection of the Adult with Note on Relation of Herpes Simplex Virus to Recurrent Aphthous Stomatitis. E. D. Kilbourne and F. L. Horsfall Jr.—p. 495.
Studies in Mitral Stenosis: I. Correlation of Physiologic and Clinical Findings. L. B. Ellis, R. A. Bloomfield, G. K. Graham and others. —p. 515.
Id.: II. Correlation of Post-Mortem Findings with Clinical Course of Disease in 101 Cases. G. K. Graham, J. A. Taylor, L. B. Ellis and others.—p. 532.

Treatment of Brucellosis.—Spink and associates made follow-up studies on 48 patients with bacteriologically proved brucellosis who were treated with (1) a combination of streptomycin and sulfadiazine, (2) aureomycin, or (3) chloramphenicol. Brucella abortus was the cause of illness in 44 of the 48 patients. Among 21 patients treated with streptomycin and sulfadiazine, there were 11 who promptly recovered and remained well, although one of these had transitory bacteremia after treatment. Five additional patients had positive blood cultures after treatment, although two of this group had no complaint of ill-health. Five others had residual complaints of ill-health. Of 22 patients receiving aureomycin, 14 recovered promptly without a relapse; 3 patients had a relapse, 1 with a positive blood culture, and 5 patients were still in ill-health. Of eight patients receiving chloramphenicol, two recovered completely; one showed no improvement; the bacteremia persisted in one, and four had residuals of ill-health. This series included several patients with severe complications, such as spondylitis, suppurative arthritis, radiculitis, and subacute bacterial endocarditis. In every instance these complications were brought under control as a result of treatment. While this indicates a definite advancement in the therapy of brucellosis, a significant number of patients relapsed or had residual complaints of ill-health. Therapeutic investigations should be made with the combination of dihydrostreptomycin and aureomycin.

Treatment of Pneumococcic Meningitis: Antagonism of Penicillin and Aureomycin.—Among 43 patients with pneumococcic meningitis treated with massive parenteral doses of penicillin, 13 (30%) died. Among 14 similar patients treated with aureomycin in addition to the same dose of penicillin, 11 (79%) died. To assure random sampling, alternate patients were selected for treatment with penicillin alone and for treatment with penicillin and aureomycin combined. There was no essential difference between the two groups with respect to age, the number of organisms in the spinal fluid, mental status, portal of entry, pneumococcic complications, the presence of other diseases, or the day on which therapy was started. It is concluded that the poor results with the penicillin-aureomycin combination were not due to the chance inclusion of more severely ill patients in this group, nor did toxicity to aureomycin seem to account for the results. Rather, the evidence indicates that penicillin and aureomycin are mutually antagonistic when employed together in the treatment of pneumococcic meningitis. It appears unwise to use combinations of penicillin and aureomycin, terramycin, or chloramphenicol in treatment of patients with pneumococcic meningitis, or in treatment of any patients, even those with milder infections, in which antagonism has been shown in vitro. Consistently good results have been obtained in the treatment of pneumococcic meningitis with doses of 1,000,000 units of penicillin at two-hour intervals without use of the intrathecal route. Since good results have been obtained by the use of aureomycin therapy alone in pneumococcic meningitis, further studies should be made on the efficacy of aureomycin, terramycin, and chloramphenicol, without adjuvant penicillin.

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An asterisk (*) before a title indicates that the article is abstracted.

Maine Medical Association Journal, Portland

42:279-300 (Sept.) 1951

President's Address. F. C. Small.—p. 279.
The College and the Medical School. E. C. Marriner.—p. 282.
Case Report of Ludwig's Angina with Complications. J. E. Poulin. —p. 284.
Bilateral Direct Hernias Repaired with Tantalum Mesh. R. J. F. Pomerleau.—p. 286.
Retro-Pubic Prostatectomy. W. A. Greenlaw and L. A. Guite.—p. 287.
Surgical Use of Steel Wire. R. L. Chasse.—p. 289.
Report and Observations on Full Thickness Skin Graft to Hand. E. J. Smith.—p. 290.
Acute Torsion of Omentum Without Hernia: Case Report. O. F. Pomerleau.—p. 292.

Neurology, Minneapolis

1:341-418 (Sept.-Oct.) 1951

Human Frontocorticopontine Tract: Functional Inconsequence of Its Surgical Interruption. R. Myers.—p. 341.
Phenomena and Correlates of Psychomotor Triad. W. G. Lennox. —p. 357.
Intracranial Neoplasm Associated with 14 to 6 Per Second Positive Spikes. W. A. Stephenson.—p. 372.
Anticonvulsant and Toxic Effects of Alpha-Phenyl-Butyryl Urea. M. J. Orloff, P. E. Feldman, C. H. Shaiova and C. C. Pfeiffer.—p. 377.
Extradural Hematoma of Posterior Fossa. R. C. Schneider, E. A. Kahn and E. C. Crosby.—p. 386.

Quarterly J. Studies Alcohol, New Haven, Conn.

12:167-354 (June) 1951

Inhalation of Ethyl Alcohol by Man: I. Industrial Hygiene and Medicolegal Aspects. II. Individuals Treated with Tetraethylthiuram Disulfide. D. Lester and L. A. Greenberg.—p. 167.
Failure of Oxygen, Oxygen-Carbon Dioxide, or Pyruvate to Alter Alcohol Metabolism. F. W. Kinard, W. M. McCord and J. C. Aull Jr.—p. 179.
*Psychiatric Implications of Treatment of Alcoholism with Tetraethylthiuram Disulfide: Preliminary Report. B. H. Gottesfeld, L. M. Lasser, E. J. Conway and N. M. Mann.—p. 184.
Psychotic Phenomena Provoked by Tetraethylthiuram Disulfide. O. Martensen-Larsen.—p. 206.
Alcoholism as Sickness. L. E. Wexberg.—p. 217.
Alcoholism and Social Stability: Study of Occupational Integration in 2,023 Male Clinic Patients. R. Straus and S. D. Bacon.—p. 231.
Tolserol in Treatment of Postalcoholic State. M. Herman and A. S. Effron.—p. 261.
Psychometric Examination of Latent Homosexuality in Alcoholism. J. Botwinick and S. Machover.—p. 268.
Group Therapy in Alcoholism: Transcriptions of Series of Sessions Recorded in Outpatient Clinic. R. G. McCarthy.—p. 273.

Psychiatric Implications of Antabuse® Therapy.—This study evaluates the psychiatric implications of tetraethylthiuram disulfide (antabuse®) treatment of alcoholism, based on experience with 42 patients. In 8 of these 42 patients psychotic episodes developed, which were transitory in 5, responding promptly to the withdrawal of tetraethylthiuram disulfide and the use of mild sedation. Three were relatively prolonged. The projective, hostile person who feels threatened by help and who has diffi-

culty in forming interpersonal relationships is usually not a desirable candidate for treatment with tetraethylthiuram disulfide. A history of psychotic epidoses or an indication of incipient psychosis contraindicates treatment with this drug. Borderline schizophrenic adjustments, as well as character neuroses with transitional schizophrenic components, should be watched for. Five of the eight psychotic responses occurred several weeks after the patient's discharge from the hospital, and indications of mounting anxiety usually had been observable during the earlier tetraethylthiuram disulfide alcohol reaction tests. Watching for this anxiety may be helpful in recognizing and managing psychiatric complications. Of the three other breakdowns, one emerged shortly after the third tetraethylthiuram disulfide alcohol test in the hospital (four weeks after the beginning of tetraethylthiuram disulfide medication), one occurred at the first test, and the third was manifested prodromally during the first test. The incidence of therapeutic success is highest when tetraethylthiuram disulfide treatment is employed with persons selected on the basis of psychiatric criteria of suitability. Ability to respond to psychotherapy also makes response to this drug likely. A considerable schizophrenic gradient was present in all patients who revealed tendencies toward psychotic reactions.

Surgery, St. Louis

30:437-596 (Sept.) 1951

Observations of Surgical Training in America in Relation to Objectives of the American Board of Surgery. C. W. Schwegman.—p. 437.
Search for Lymph Node Metastases in Cancer of Rectum. L. F. Peltier. —p. 443.
New Operative Approach to Inflammatory Strictures of Rectum and Rectosigmoid. B. Eiseman and C. B. Mueller.—p. 448.
Fatal Complication of Mikulicz Operation and Mont Reid Procedure for Procidentia of Colon and Rectum. I. L. Lichtenstein and A. W. Ulin. —p. 456.
New Method for Obtaining Barium Enemas in Colostomy Patients. F. S. Cross.—p. 460.
Extensive Resection of Small Intestine Followed by Vagotomy: Experimental Study of Fat and Nitrogen Excretion on Dogs. E. C. Weckesser, J. L. Ankeney, A. F. Portmann and others.—p. 465.
*Transplantation of Ileum: Experimental Study. C. B. Mueller and H. W. Fischer.—p. 477.
Experiences in Experimental Portacaval Anastomosis. W. L. Jamison, T. J. Dugan, C. P. Bailey and H. P. Redondo Ramirez.—p. 484.
Coexistence of Goiter and Deaf-Mutism. O. P. Friedlieb.—p. 496.
Spontaneous Rupture of Esophagus: Report of Two Patients Treated Surgically with Survival. J. P. Carter, E. M. Alrich and E. C. Drash. —p. 500.
*Influence of Cortisone on Survival of Homografts of Skin in Rabbit. J. A. Morgan.—p. 506.
Clinical and Statistical Studies of Cotton Suture Material with Special Reference to Cost. J. D. Steele and L. G. G. Glasson.—p. 516.

Transplantation of Ileum: Experimental Study.—In attempts to remove sigmoid and rectal lesions with preservation of the anal sphincter, new procedures are being devised and older ones modified. The authors of this paper suggest a method for restoring continuity of the large bowel with an interposed loop of ileum. Their work was done on nine dogs. A loop of terminal ileum was isolated by cutting the mesentery back to its root and dividing the bowel at each end. The continuity of the ileum was then restored by an open end-to-end ileoileostomy, and the mesentry was approximated. A rubber-shod clamp was left on the proximal end of the isolated ileal loop, while the distal end was occluded. The sigmoid colon was then divided. The proximal end of the ileal loop was swung over, and anastomosed to the descending colon. The mesenteries of the ileal loop and the descending colon were approximated down to the base of the mesentery of the descending colon. The mesentery of the sigmoid colon was incised and the rectum freed down to the anus. The ligature of the distal end of the ileal loop was secured to another ligature on the upper end of the sigmoid, which was to be resected. These two loops (the ileal transplant and the completely mobilized sigmoid) were replaced in the sacrum. Care was taken to carry the abdominal-pelvic dissection down into the internal sphincter. The perineal procedure was that of Swenson and Bill with a slight modification. Only four dogs survived, but the authors feel that the high immediate mortality should not detract from the value of the operation. The four surviving dogs, and all but one of those dying postoperatively, had viable ileal loops. Three animals with replacement of the rectum survived for relatively long periods, enjoying good health, and were observed sufficiently long to evaluate stool habits. The results indicate that continence may be obtained after a period of time, though only 1 cm. of rectum remains.

Cortisone and Survival of Homografts.—Homotransplantation of pinch skin grafts was performed in 22 pairs of white albino rabbits. One of each pair of rabbits was given cortisone, 4 mg. per kilogram of body weight daily, and the other kept as a control. In all 22 controls the grafts healed primarily to the graft bed, but necrosis was well under way in many cases by the 6th day and was complete by the 10th to the 12th day in all cases. In 13 of the treated animals, the destruction of the grafts was definitely delayed at least during an observation period of from three to six weeks. These grafts remained viable, and there was continued epithelial spread from the graft border during the period of observation. In two rabbits receiving cortisone, homografts were initially successful. However, in the third and fourth weeks, after the denuded area was epithelized, desquamation at the homograft sites occurred, native epithelium apparently replacing that of foreign origin. In another successfully treated animal, the grafts became completely necrotic within six days after cortisone was withheld, on the 18th day. In the other six treated animals, although some delay in the destruction of the grafts was evident in comparison with the controls, necrosis and death of the grafts occurred within two to three weeks. Five of these failures were in old males with very thick skins.

Tennessee State Medical Assn. Journal, Nashville

44:365-404 (Sept.) 1951

Fluid and Electrolyte Balance in Health and Disease. A. S. Minot. —p. 365.
Recent Advances in Treatment of Acute Small Bowel Obstruction: Analysis of 80 Cases. B. O. Garner, M. L. Saylor and J. E. Hamilton. —p. 372.

V 147
1951

Texas State Journal of Medicine, Fort Worth

47:613-672 (Sept.) 1951

*Studies of Factors in Congestive Heart Failure During Effective Therapy. H. P. Reveley, G. R. Herrmann and J. A. Ortiz.—p. 617.
Significance of Bundle-Branch Block. R. P. Johnson, A. L. Messer and Shreenivas.—p. 621.
Surgical Treatment of Varicose Veins. A. W. Hartman.—p. 627.
Choice of Intravenous Fluids. M. M. Minter.—p. 632.
Psychoses Related to Childbirth. A. H. Hill and D. M. Keedy.—p. 635.
Therapy of Deafness. W. K. Wright and F. R. Guilford.—p. 639.

Factors in Congestive Heart Failure.—The concept of the renal regulation of the fluid compartments of the body is essential to an understanding of modern concepts of congestive heart failure. It is to be remembered that the fluid must be transported to the kidneys by the circulation, which in turn depends on myocardial integrity, and that the kidneys are sensitive to circulatory changes and to pituitary and adrenal hormones. The "backward pressure" theory of the progression of congestive heart failure has been challenged as inadequate in explaining all of the associated phenomena. A new concept of congestive failure, which emphasizes extracardiac factors, has been derived. In this paper Reveley and associates report studies of kidney function in patients with congestive heart failure under the influence of aminophylline, a xanthine diuretic, and mercaptomerin (thiomerin®) sodium, a mercurial diuretic. Their purpose was to clarify the mechanisms involved in the alleviation of edema. Simultaneous determinations were made of plasma volume (in terms of concentration of Evans blue dye); venous pressure; specific gravity of the blood; hematocrit; renal clearance of sodium, potassium, and chloride ions; and clearance of inulin and para-aminohippurate. The authors were able to confirm the depressing effect of mercurial diuretics on tubular reabsorption of sodium. The circulatory effects of mercurial diuretics apparently are secondary to the excretion of edema fluid. Clearance studies seem to indicate that aminophylline exerts its effect on the renal circulation. It augments sodium and water excretion by increasing the glomerular filtration rate. Changes in tubular function after the administration of aminophylline are thought to be secondary to circulatory effects.

FOREIGN

Brain, London

74:249-376 (Sept.) 1951

Interpretation of Experimental Studies of Cortical Motor Function: With Special Reference to "Operational View" of Experimental Procedures. F. M. R. Walshe.—p. 249.
Types of Visual Perseveration: "Paliopsia" and "Illusory Visual Spread." M. Critchley.—p. 267.
Thrombosis of Basilar Artery and Vascularization of Brain Stem. A. Biemond.—p. 300.
Sensory Changes in Nerve Blocks Induced by Cooling. D. C. Sinclair and J. R. Hinshaw.—p. 318.
Insensitivity to Pain. E. C. O. Jewsbury.—p. 336.
Further Studies of Effects of Cortisone and ACTH on Neurological Disorders. G. M. Shy and D. McEachern.—p. 354.
Case of Organized Visual Hallucinations in an Old Man with Cataract, and Their Relation to Phenomena of Phantom Limb. J. E. A. Bartlet. —p. 363.

British Journal of Cancer, London

5:153-288 (June) 1951. **Partial Index**

Studies on Incidence of Cancer of Lung and Larynx. E. L. Kennaway and N. M. Kennaway.—p. 153.
*Negative Correlation Between Atherosclerosis and Carcinoma. O. Wanscher, J. Clemmesen and A. Nielsen.—p. 172.
Note on Geographical Variations in Cancer Mortality, with Special Reference to Gastric Cancer in Wales. C. D. Legon.—p. 175.
Estimation of Biological Dosage Factors in Clinical Radiotherapy. L. Cohen.—p. 180.
Differentiation in Rodent Ulcer Group of Tumours. B. Lennox and A. L. Wells.—p. 195.
Polarographic Serum Test and Other Serum Tests in Prognosis of Cancer. L. O. Butler.—p. 225.
Electrophoretic Behaviour of Normal and Pathological Human Sera in Relation to Polarographic Serum Test for Cancer. E. Boyland, L. O. Butler and B. E. Conway.—p. 235.
Effects of Ultraviolet Radiation on 3:4-Benzpyrene: Carcinogenic Activity of Water-Soluble Photo-Derivatives When Used with Croton Oil as Co-Carcinogen. C. B. Allsopp.—p. 273.
Effect of Hormonal Factors and Removal of Certain Organs upon Growth of Transplanted Rat Tumour. C. Funk, P. Tomashefsky, R. Soukup and A. Ehrlich.—p. 280.

Atherosclerosis and Carcinoma.—The observation that atherosclerotic lesions found at post mortem examination of the aorta and coronary arteries of patients with malignant diseases appeared to be less pronounced than similar lesions found in persons without malignant lesions induced Wanscher and associates to make comparative studies on this problem. On the basis of 1,835 autopsies they conclude that there is a decided difference in the degree of atherosclerotic lesions in patients with and without carcinoma. It is assumed that the presence of carcinoma influences the atherosclerotic lesion.

British Journal of Experimental Pathology, London

32:157-284 (June) 1951. **Partial Index**

Quantitative Studies in Diphtheria Prophylaxis: Some Observations on Correlation in Identified Guinea-Pigs Between Their Responses to More Than One Inoculation of Diphtheria Prophylactic. L. B. Holt.—p. 157.
Bodily Reactions to Trauma: Further Studies on Effect of Ischaemia on Clotting Factor of Muscle. H. B. Stoner and H. N. Green.—p. 183.
Factors Influencing Agglutinability of Red Cells. R. R. A. Coombs, M. H. Gleeson-White and J. G. Hall.—p. 195.
Valency of Antibodies. J. R. Marrack, H. Hoch and R. G. S. Johns. —p. 212.
Factors Influencing Development of Potential Immunity and Character of Secondary Response. M. Barr and M. Llewellyn-Jones.—p. 231.
Some New Observations on Diphtheria Toxin and Antitoxin. C. G. Pope, M. F. Stevens, E. A. Caspary and E. L. Fenton.—p. 246.
Envelope Substance of Pasteurella Pestis. C. R. Amies.—p. 259.
*Effect of Cortisone upon Some Experimental Hypersensitivity Reactions. J. H. Humphrey.—p. 274.

Effect of Cortisone on Experimental Hypersensitivity Reactions.—Studies were undertaken to ascertain whether the decrease in the Arthus and other reactions previously observed after administration of large doses of salicylate could be explained on the basis of cortisone-like action, resulting primarily from the salicylate itself or arising secondarily from adrenal stimulation. The author's technique measured the effect of drugs on the edema at the sites of reversed passive Arthus reactions in rabbits. It was found that a single dose of cortisone greatly diminished such edema. A dose of 0.5 mg. per kilogram of body weight was effective, but 2 mg. or more per kilogram was more effective. The effect of cortisone was apparent within one hour after injection and lasted for up to 24 hours. Similar but less marked effects on passive Arthus reactions were produced by colchicine. Subsequent studies showed that the administration of cortisone conferred a definite but minor degree of protection against anaphylactic shock in guinea pigs and that cortisone, but not colchicine, prevented Shwartzman reactions in rabbits. A comparison of the effects of cortisone with those of large doses of sodium salicylate suggests that the effects of salicylate upon hypersensitivity reaction may be mediated through the adrenal cortex.

Journal of Physiology, London

114:419-548 (Aug.) 1951. **Partial Index**

Measurement of Intestinal Blood Flow in Man. J. Grayson.—p. 419.
Foveal and Para-Central Spectral Sensitivities in Man. R. A. Weale. —p. 435.
Effect of Emotion and of β-Tetrahydronaphthylamine on Adrenal Cortex of Rat. M. Vogt.—p. 465.
Physiological Significance of Sweat Response to Adrenaline in Man. T. M. Chalmers and C. A. Keele.—p. 510.
Inhibitory Action of Acetylcholine with Special Reference to Small Doses. R. J. S. McDowall and R. Watson.—p. 515.
Variations in Circulation of Portal Venous Blood Within the Liver. P. M. Daniel and M. M. L. Prichard.—p. 521.

Lancet, London

2:411-456 (Sept. 8) 1951

*Hemispherectomy in Treatment of Infantile Hemiplegia. H. Cairn and M. A. Davidson.—p. 411.
Immediate Results of Sanatorium Treatment: Survey of 2,472 Cases. W. E. Snell.—p. 415.
Renal Anacidogenesis. K. Lundbaek.—p. 419.
Rate of Blood-Flow in Umbilical Cord. A. D. M. Greenfield, J. T. Shepherd and R. F. Whelan.—p. 422.
Treatment of Pulmonary Tuberculosis Complicated by Meningitis: Illustrative Case. H. V. Smith, H. Stevens and G. C. L. Pile.—p. 424.
Absorbable Gelatin Sponge in Experimental Surgery. G. Blaine.—p. 427.
Fatal Meningitis in Typhoid Fever Treated with Chloramphenicol. C. E. G. Smith and A. T. H. Marsden.—p. 430.
Sterilisable Thermometer for Measuring Intra-Abdominal Temperature. J. Grieve.—p. 431.

Hemispherectomy in Infantile Hemiplegia.—Infantile hemiplegia is the end-state of various pathological conditions affecting the cerebral hemisphere before or during birth, or in the first years of life. Most cases evolve in one of three ways: 1. The infant is observed to be hemiplegic after a difficult delivery. 2. The child appears healthy at birth, but an illness characterized by convulsions, coma, and fever, often diagnosed as "encephalitis," is followed by hemiplegia. 3. Without previous acute illness, the child has fits followed by hemiplegia. The authors disregard the cases of acute infantile hemiplegia in which physical and mental development is nearly normal and there are no fits. In the cases under consideration treatment is sought because of fits or mental abnormality. The hemiplegia affects the arm (especially the hand) more than the leg. The limbs are spastic and shorter and smaller than normal, and there is flexion contracture at the wrist and fingers and often talipes equinus. The patient may walk well, though with a limp. In the upper limb there are crude mass movements, often with an athetoid component. With this clinical state the opposite cerebral hemisphere is small; its lateral ventricle is usually dilated and there may also be porencephalic or subarachnoid cysts; the head and face are smaller than on the hemiplegic side. Until recently treatment was limited to anticonvulsant drugs, special schooling, physical therapy, and orthopedic operations on the affected limbs. Experiences by Krynauw and others with hemispherectomy induced Cairns to use this operation in three cases: a youth of 19, a girl of 7, and a young woman of 20. The results were dramatic. The fits have stopped and the hemiplegia is no worse; in two cases it is slightly improved, because the muscles are less spastic. The most remarkable improvement was in mentality. All three patients seem to have developed socially; one has shown great intellectual improvement, and the others have also improved in this respect. Behavior has changed dramatically. More experience is needed before the indications for cerebral hemispherectomy can be fully defined. It is not suitable for all cases, but it should be undertaken in any case of infantile hemiplegia with fits that cannot be controlled by drugs or in which there is backwardness or deterioration in the patient's intellectual or emotional state.

Medical Journal of Australia, Sydney

2:33-68 (July 14) 1951. **Partial Index**

Teaching of Anaesthesia, Especially in Relation to Safety and Resuscitation. N. R. James.—p. 33.
Surgery and Surgical Teaching Overseas. A. E. Coates.—p. 38.
Anuria. J. Isbister.—p. 42.
*Intensive Oxygen Therapy as Possible Cause of Retrolental Fibroplasia: Clinical Approach. K. Campbell.—p. 48.
Guillain-Barré Syndrome: Three Cases in Aboriginal Natives. E. G. Saint.—p. 50.

Intensive Oxygen Therapy and Retrolental Fibroplasia.—The occurrence of retrolental fibroplasia is reported in 27 of 181 premature infants born during the three year period of 1948 to 1950. The birth weights of these infants varied from 1 lb. 7 oz. (652.04 gm.) to 3 lb. 8 oz. (1587.6 gm.). In the great majority of these infants there had been 30 weeks of gestation or less. The infants were in three different institutions. Management was identical except for the amount of oxygen used. The first group, comprising 123 infants, was given oxygen by oxygen crib in which the percentage of oxygen was from 40 to 60. The oxygen was often given prophylactically as well as during the periods of cyanosis; it was used more extensively than in the other groups. Of these 123 infants, designated as the high-oxygen therapy group, retrolental fibroplasia developed in 23. Most, but not all, of the infants in the second group were given oxygen by intranasal catheter or funnel in an electrically heated and humidity-controlled crib, while the infants in the third group received oxygen mainly by tent, sometimes by oxygen crib, and occasionally by intranasal catheter or funnel. These two groups together were designated as the moderate-oxygen therapy group and comprised 58 infants, in 4 of whom retrolental fibroplasia developed. The different incidence of retrolental fibroplasia in these two groups is statistically significant. The duration of oxygen therapy in infants with retrolental fibroplasia varied from eight days to intermittent therapy for six weeks. Oxygen was given to many premature infants for periods up to two and a half weeks without the condition developing and to a few for as long as four weeks without eye injury. It is suggested that high concentrations of oxygen may have a potentially toxic effect on premature infants and that this may have been enhanced in one of the author's patients by pyrexia and by toxemia in several others with a history of pneumonia. The generalized vascular damage and edema so produced may affect the eye and form the starting point for retrolental fibroplasia. The prophylaxis of this condition consists in the following measures: (1) an endeavor to carry the fetus to 33 weeks' gestation or more; (2) avoidance of intensive oxygen therapy by giving oxygen only when the infant is cyanosed and not as a prophylactic measure; (3) avoidance of overheating; (4) prevention of infection, and, should it occur, its prompt and efficient treatment.

Medizinische Monatsschrift, Stuttgart

5:597-668 (Sept.) 1951. **Partial Index**

Electric Shock Therapy: 12 Years' Experience on Mode of Action and Indications. R. Brickenstein.—p. 597.
Urogenital Tuberculosis: Pathology, Diagnosis and Therapy. W. Lehmacher.—p. 601.
Diagnosis and Therapy of Rheumatism. H. Gehlen.—p. 619.
Changes in Serum Protein in Rheumatic Polyarthritis. G. Schettler.—p. 622.
Gastroscopy After Operations on Stomach. E. Scherer.—p. 628.
Pathogenesis and Treatment of Acute Pancreatitis. H. Becher and H. Laux.—p. 633.
Differentiation of Posterior Wall Infarcts in the Electrocardiogram. H. Löffler.—p. 638.
*Mandelic Acid Therapy in Colibacillary Cholecystitis-Cholangitis: Experimental Proof of Elimination and Bactericidal Action of Mandelic Acid in Inflammatory Disorders of the Bile Passages. R. Lücking.—p. 642.

Mandelic Acid Therapy in Colibacillary Cholecystitis and Cholangitis.—Whereas formerly mandelic acid was employed only in colibacillary infections of the urinary tract, in recent years attempts have been made to employ it in enterocolitis, in perityphlitic and periproctitic abscesses, in diffuse peritonitis and in colibacillary cholecystitis and cholangitis. In these experimental studies it was found that intravenously administered mandelic acid appears in the bile and that in cholecystitis and cholangitis it finds in the bile passages the conditions necessary to exert bactericidal effects on colon bacilli. It was shown that mandelic acid has choleretic characteristics and is capable of influencing the acidity of gastric and duodenal secretions, which the author regards as additional proof of its therapeutic value. Mandelic acid is more bactericidal in acute than in chronic disorders of the biliary tract. The intravenous method of administration used in these studies has no advantage over oral administration, the latter being, moreover, more economical. The bacteria are influenced much less readily by the massive, short-lived presence of antibacterial substances than by prolonged and continuous presence of such substances. Parenteral therapy is indicated only at the onset of urgent conditions and in cases in which oral therapy is not advisable. The intravenous dose of the drug was 20 cc. three times daily, injections being made very slowly. For oral administration the author prefers magnesium and ammonium mandelate. He regards from 12 to 15 gm. of mandelic acid substance as an adequate daily dose. A ketogenic diet or suitable medication and limitations of fluid intake are valuable as supportive measures.

Münchener medizinische Wochenschrift, Munich

93:1693-1780 (Aug. 31) 1951. **Partial Index**

Yeast Therapy as Biologic Treatment of Cancerous Organism. F. Gottschalk.—p. 1707.
Electrokymography and Phase Analysis of Heart. K. Heckmann.—p. 1709.
Bacterium Coli and the Problem of Tuberculosis. W. Freund and K. Martens.—p. 1719.
Salicylate in Rheumatic Diseases. W. Hangarter and B. Petersen.—p. 1729.
*Lying on the Abdomen as a Therapeutic Measure. R. Stahl.—p. 1733.
Reflex Action Mechanism of Ultrasonics in Sympathetic Nervous System. W. Hoenig.—p. 1743.
Comparison of Leukocyte Count in Light-Field Microscopy and Under the Fluorescence Microscope. H. Mai and W. Kosenow.—p. 1746.

Lying on the Abdomen as a Therapeutic Measure.—In 1923, Rautenberg used the prone position in pulmonary disorders with beginning liquefaction of exudate and deficient expectoration and described the results as life-saving. Stahl observed patients with tuberculosis of the vertebral column at Rollier's clinic in Leysin who were kept lying on the abdomen from 8 to 12 hours a day. Percussion of patients with different types of physiques revealed that in the supine position the lower limits of the lung differ little from those found in the sitting posture but that in the prone position the limits are lower in all types of physiques. Roentgenograms reveal that during both inspiration and expiration the postdiaphragmatic sinus is wider and lower in the prone than in the supine posture. The maximal opening of the posterior diaphragmatic sinus facilitates better ventilation and blood perfusion in the lower lobe of the lung. The abdominal posture can be tried in most patients except when wounds, suppurations, or arthritis make it impossible or when severe cardiac insufficiency, dyspnea, or a tendency to apoplexy contraindicate it. The musculature is strengthened, and, in addition, the metabolism is stimulated and the complications resulting from prolonged lying on the back are prevented. The position may have prophylactic value in pneumonia. Even unconscious patients can be put in this position, since it facilitates evacuation of fluids from nose and mouth. The prone position, preferably combined with occupational therapy, can be employed for group treatment in hospital wards by letting patients assume this position twice a day for from 10 minutes up to an hour. The author recommends the use of a flat mattress. A wedge-shaped cushion is placed under the chest, so that the patient can lean his elbows over it; the head is held up and is not to be supported. In some patients a ring-shaped cushion may be placed under the abdomen. A wedge-shaped cushion under the shins prevents an excess load on the toes. The patients can read, write, and do handicraft work in this position, in fact they should be urged to work at something while they are in this position, because with suitable diversion, they will maintain it longer. Furthermore, activity in this posture will strengthen the musculature of neck, shoulders, arms, and back.

Philippine Medical Association Journal, Manila

27:397-434 (June) 1951

Liver Complication of Amebiasis in Children. A. V. Tupas and D. F. Dauis-Lawas.—p. 397.
Deafness—Its Therapy. R. J. Ongsiako Jr.—p. 404.
Early Signs of Malignancy of the Male G-U Tract. L. F. Torres Jr.—p. 409.
Coronary Thrombosis with Myocardial Anterior Infarction. M. Quisumbing Sr.—p. 412.

V 147
1951

BOOK REVIEWS

Ophthalmology. By Arno E. Town, M.D., Professor of Ophthalmology, Jefferson Medical College of Philadelphia, Philadelphia. Cloth. $10. Pp. 511, with 212 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1951.

The author, assisted by 11 contributors, has prepared a textbook for the undergraduate and the general practitioner. It is written from the viewpoint of the ophthalmologist and concisely presents ocular disease and therapy rather than an integration of ophthalmology with general medicine. However, the general conditions commonly causing ocular signs are adequately discussed, and the chapter on the retina contains an excellent discussion of ophthalmoscopy in systemic disease. The first portion of the book, which is devoted to the objective examination of the eye, contains a particularly well-written section by Wagman on the physiology of vision. Succeeding sections concern the various parts of the eye and adnexa and anatomy, anomalies, diseases, and therapy. There are additional chapters on glaucoma, neuro-ophthalmology, ocular changes in systemic disease (in tabular form, which could well be expanded), therapeutics, eye injuries, and surgery. The various authors' contributions have been well integrated, and there is no unevenness and little overlapping of subject matter. References are not exhaustive but indicate the significant recent work in the field. The illustrations are pertinent, numerous, and well reproduced; mechanically the book is excellent.

There are a number of references to corticotropin (ACTH) and cortisone, but, as might be expected, the tremendous clinical implications of these hormones in ophthalmology have not been reflected in the text. The frequency of sensitization to local penicillin is not emphasized, and the reader may conclude that it is the antibiotic of choice for topical application. Similarly, sulfathiazole ointment is recommended for local use, although it causes sensitivity in a large number of users. Some of the therapeutic concepts presented are controversial, and the wisdom of their presentation in an introductory text may be questioned. The book may be added to the growing list of texts available for undergraduate teaching of ophthalmology; it is probably the most up-to-date of any currently available.

Visceral Radiology. By Emerik Markovits, M.D. Cloth. $24. Pp. 612, with 682 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1951.

The author was educated in Hungary and is now living in New York. Formerly attached to the Holzknecht-Institute of Vienna, Dr. Markovits is now radiologist of the Steiner Cancer Clinic, Atlanta, Ga. In 1949 he published "Bone and Joint Radiology." The distinctive feature of the present work is best described by the author in his preface. He says, "As in my previous book, 'Bone and Joint Radiology,' the subjects of this volume are also viewed in the mirror of the basic sciences of anatomy, physiology, and pathology, rather than on simple experience in interpreting roentgenograms and fluoroscopic images." The author further says, "The clinical responsibility of the radiologist is more and more apparent and has often to be shared by other specialists." The author has succeeded in presenting his subject in the manner intended. Anatomy, physiology, the basic sciences, and clinical history are emphasized throughout.

The book is divided into six parts. Fully one-third is occupied by Part 1, "The Chest and the Respiratory System." The author has covered an extensive area of related clinical aspects as they appear to the radiologist in his examination. Fluoroscopic observations are emphasized. Part 2, "The Circulatory System" deals largely with that portion of the circulatory system contained in the thoracic cage. Part 3, "The Digestive System" covers the radiologic aspects from the esophagus to the distal colon. "The Abdomen and Abdominal Organs," Part 4, is a small section and covers the subject rather generally. Part 5 is "The Genitourinary System," and Part 6 concerns the central nervous system and is brief compared to the other portions.

Each part contains a number of rather terse charts of differential diagnosis. Here the author has integrated the clinical aspects with radiologic observations. The volume is profusely illustrated with both radiographic reproductions and many schematic charts. From the standpoint of the advanced radiologist the subject matter is largely elementary and hardly original. The author has freely drawn from other authorities but with proper recognition in every instance. The volume would be helpful to the clinician and would be an excellent guide for students in radiology as well as a satisfactory pattern for the teacher to follow in undergraduate teaching. The most commendable feature of the entire work is the emphasis on the correlation of clinical aspects with radiologic studies and the importance of evaluation of radiologic interpretations in terms of clinical manifestations. The reproductions are excellent, and the schematic charts are well done. The volume also includes an extensive bibliography, upon which the author has presumably drawn liberally.

Histologie und mikroskopische Anatomie des Menschen. Zweiter Band: Organe und Systeme. Von Dr. W. Bargmann, o. ö. Professor der Anatomie an der Universität Kiel. Cloth. 45 marks. Pp. 563, with 412 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1951.

This book deals with the specific histology of the various organ systems. Interestingly enough, the circulatory system is combined with the defense system, including not only the blood but also the spleen, the lymph nodes, and the reticuloendothelial and lymphoepithelial systems, the last-mentioned including the tonsils and thymus. Otherwise, the system organization follows more conventional lines. The attempt to incorporate physiological, biochemical, and submicroscopic morphologic findings into a textbook of histology succeeded surprisingly well; pathologic observations also find extensive consideration, and the correlation with the gross anatomy is well accomplished. The illustrations are almost entirely black and white drawings, some of them schematic, all of them of excellent didactic value and well reproduced. An unusually large number are based on original work of the author, who has contributed much fundamental information to histology in general. The discussion is rather detailed, in many places more than required for the medical student, but serves well as a reference book. A small number of well selected literature references, almost exclusively German, follow each chapter and serve as a good starting point from which to obtain further information. In toto, the book presents histology at its best and should be a help to the American who is interested not only in good histologic illustrations but also in obtaining finer points of information.

Radioactivity Applied to Chemistry. Arthur C. Wahl, editor, and Norman A. Bonner, assistant editor. Cloth. $7.50. Pp. 604, with illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1951.

The purpose of this book is to acquaint the reader with the possibilities of applying radioactivity to various fields of chemistry and to furnish him with a summary of the work that has already been done. The book is divided into two parts. The first deals with the application of radioactivity to chemical kinetics, structural chemistry, self-diffusion studies, analytical chemistry, surface determination, and the discovery and investigation of the newer elements. Isotopic exchange reactions, behavior of carrier-free tracers, chemical phenomena accompanying nuclear reactions, and emanation methods are also described. The second part of the book contains 18 tables corresponding to the subject matter of the text and summarizing the data found in the literature to January, 1950. An important contribution to the rapidly growing literature of radiochemistry, this book will be of great interest to the research worker and student in this field.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Large Scale Rorschach Techniques: A Manual for the Group Rorschach and Multiple Choice Tests. By M. R. Harrower, Ph.D., and M. E. Steiner, M.A., Research Psychologist, General Electric Company, Bridgeport, Connecticut. With contributions by Floyd O. Due, M.D., Assistant Clinical Professor of Psychiatry, University of California Medical School, San Francisco, Beatrice A. Wright, Ph.D., Assistant Professor of Psychology, San Francisco State College, San Francisco, and M. Erik Wright, Ph.D., M.D., Professor of Clinical Psychology, Department of Psychiatry, University of Kansas Medical School, Lawrence, Kan. Publication number 82, American Lecture Series, monograph in American Lectures in Psychology. Edited by M. R. Harrower, Ph.D. Second edition. Cloth. $8.50. Pp. 353, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford; Ryerson Press, 299 Queen St., W., Toronto 2B, 1951.

This is intended as a manual for the group Rorschach and multiple choice tests. It presents the procedure in administration and scoring for both tests, together with various studies that have been made in an attempt to establish their validity. The introduction of group procedures with the Rorschach caused much controversy over their validity and reliability. Many authorities objected to these methods on the grounds that they destroy the essential nature of the Rorschach, so that they can never hope to achieve comparable results with the individual method. This is freely admitted by the authors, but it is emphasized that the group procedures are not meant to replace the individual Rorschach; they are meant to be used as screening devices when large-scale psychological testing is required. Thus, the question is not whether the group procedures are as good as the individual Rorschach but whether they are better and more economical in time and money than the psychometric screening devices we now have. The answer to this question can only be obtained through further research. To fully understand the group procedures and their results it is advisable that the reader have some previous knowledge of scoring and interpretative principles for the individual Rorschach, since they are not given in the book.

This edition contains several studies not found in the first edition (1944). The most valuable is a statistical comparison between the group and individual Rorschach methods as to the locations, determinants, and contents "pulled" by each card for normal persons. This, together with the studies of frequency of rejection and distribution of anatomic answers on each of the 10 cards and the list of popular answers, can be a great aid even to the clinician interested only in the individual Rorschach. The section on interpretative principles in differential diagnosis provides a good review of pathognomonic indicators, for they are presented in a clearer and more condensed form than in the more basic texts by Klopfer and Beck. It tends to be dogmatic, however, and over-generalized, so that one who is unfamiliar with the Rorschach may be led to accept them without qualification. This is not intended to be the last word on the group Rorschach and multiple choice tests, but rather it is meant to point the way to future research. Clear in its presentation of experimental design and the statistical methods used, this book is an excellent example of the scientific approach to a study of personality.

Electroencephalography in Clinical Practice. By Robert S. Schwab, M.D., Director of Brain Wave Laboratory, Massachusetts General Hospital, Boston. Cloth. $6.50. Pp. 195, with 106 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2. 1951.

The purpose of this monograph is to discuss the uses and limitations of electroencephalography in the diagnosis and study of diseases of the nervous system. It is addressed to neurologists, neurosurgeons, psychiatrists, and internists who treat neurological patients. The monograph is divided into nine chapters. The first four chapters concern the history of the development of electroencephalography, the technique, and the criteria for the separation of normal from abnormal records. Chapter 5 deals with the findings in epilepsy; Chapter 6 with other neurological and neurosurgical problems, and Chapter 7 with the electroencephalogram in psychiatry. These chapters are well written and give the clinician a clear summary of the value of electroencephalography in diagnosis. Chapter 8 discusses briefly the use of the electroencephalogram in research. Chapter 9, which deals with laboratory organization, training of the staff, and interpretation of the record, is perhaps unnecessary in a monograph not intended for the electroencephalographer.

The format of the book is good. The illustrations are clearly reproduced and serve their purpose of assisting the reader to understand the abnormal findings in various morbid conditions. There is a good bibliography at the end of each chapter and an adequate index. Most of the books previously published on electroencephalography have been in the nature of atlases and are of value chiefly to the electroencephalographer. This monograph fills the need of the clinician for a book that explains the value and limitations of the electroencephalogram in diagnosis. It should be in the library of all physicians who have occasion to refer their patients to the electroencephalographer.

A Citizens' Handbook of Sexual Abnormalities and the Mental Hygiene Approach to Their Prevention. By Samuel W. Hartwell, M.D. Report to Committee on Education of Governor's Study Commission on Deviated Criminal Sex Offender, State of Michigan. Paper. Pp. 71. Lansing, 1950.

The increased prominence of crimes by deviated sex offenders and the lack of understanding on the part of the public of what constitutes sex deviation has led Dr. Hartwell to prepare this report, which covers types of sexual deviation, disputed questions and fallacies, mental hygiene of sex, and practical aspects of the problem.

This report could be understood by an informed layman or a physician but would be not too helpful to the average person without training in psychology, child growth and development, the basic concepts of psychoanalysis, or psychopathology. The first chapter contains a rather detailed description of the common patterns of deviation and the effect each is likely to produce upon a society. Many of the misunderstandings of the layman who reacts violently to sexual deviation are explained in the second chapter. The third chapter covers the growth and development of personality and many of the reactions toward sex life from a psychoanalytical point of view. This includes an excellent chapter of sexual instruction, which could well be used by the parent groups, the church, and the school in planning instructional programs for children. The last chapter outlines the difficulties of solving the problem of sex deviation, particularly in regard to the use of the courts, punishment, and therapy. The last page contains a short but complete bibliography on sexual deviations, mental hygiene, and social psychiatry. Dr. Hartwell and the commission should be complimented for making a report of this character available to those who are concerned but uninformed on the specific problem of the deviated criminal sex offender.

V 147
1951

John Hunter. By S. Roodhouse Gloyne, M.D., Consulting Pathologist, London Chest Hospital, London. Cloth. $3.50. Pp. 104, with 17 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1950.

In his short biography of John Hunter, the famed Scottish surgeon, Dr. Gloyne has given a concise account both of 18th century English medicine and of Hunter's contributions to that era.

Hunter is followed through the formative years, when a strong interest in biology and an equally strong dislike for books and the arts is manifested. His early investigation of so many animal species was responsible in part for the eventual accumulation of the enormous variety of specimens in his museum. That he shunned the classics and did not write with ease is evidenced by his halfhearted attempt at an Oxford education and by the scant number of books and letters he wrote.

Next are described the early days in London with his brother William, who was also to become a well-known surgeon. Their anatomy school soon was acclaimed throughout Europe and served not only to train new surgeons in the "art" of dissection but to hasten the acceptance of progressive medical education in England and on the continent. Hunter's rise to the post of surgeon-general to the army and surgeon to the king was gradual. Many years of research in previously unexplored fields affected his health. His death in 1793 ended a fruitful life of 65 years.

The author is an obvious admirer of John Hunter and in fact could be criticized for devoting a disproportionate amount of space to the defense of Hunter against even the mildest of innuendos of previous biographers. However, Hunter's life is well-documented with photographs, and a complete bibliography is included. These features, in addition to the fluent style of Gloyne, make the book both informative and pleasurable reading.

QUERIES AND MINOR NOTES

CANCER OF THE LUNG

TO THE EDITOR:—*A 55-year-old man has cancer of the lung established by bronchoscopy, biopsy, and x-ray. Complete surgical removal of the left lung has been proposed. Symptoms began two or three months ago with a "cold" and productive cough, relieved by expectorants but not by antibiotics. Sputum has been negative for pathogens. Physical signs were limited to some dulness in the lower lobe of the left lung. There was no blood in the sputum. Weakness and cachexia have developed, with pain to the left of the spine at the lower rib margin, radiating around to the front. Further studies show a small grayish mass in the left bronchus; no cancer cells in the sputum (Papanicolaou stain); no x-ray evidence of metastasis to the skull; an enlarged, smooth liver reaching to the umbilicus; and stones in the gallbladder. Results of gastrointestinal study were negative. The patient has diabetes mellitus, and in the last two years he has had three severe attacks of coronary thrombosis. Psychologically, he is a bad risk. Kindly comment on the following: 1. Do metastases already exist; are they likely to occur; and where are the most likely locations? 2. Are the risks of this operation too much, considering his heart and diabetes? Will there be much deformity, as lordosis or kyphosis? 3. What would be his life expectancy with and without operation? Would the operation be his only hope for some relief? 4. Would high voltage roentgen therapy, radium, isotopes, or hormones be of any value if operation is refused?*

M.D., New York.

ANSWER.—The chance of a cure in this patient seems relatively small, because the severe pain probably represents invasion of the lower thoracic wall and because the enlargement of the liver may be due to metastasis. The cachexia, however, might be due to anorexia and sleeplessness from pain and worry. Although the heart condition and, to a small extent the diabetes, increase the surgical risk, this is less than the risk of an uncured carcinoma. As distant metastasis has not been demonstrated, a prompt exploratory operation (assuming sufficient respiratory reserve for the intended lobectomy or pneumonectomy) may reveal that no metastasis to the mediastinum has occurred, that invaded parietal pleura overlying the pulmonary lesion may be removed by extrapleural dissection, and that all the carcinoma tissue can be removed by lobectomy or pneumonectomy.

To answer the specific questions: 1. Metastasis has not been demonstrated. It almost always occurs in late bronchogenic carcinoma and occasionally occurs early. Most frequently it is in the hilar, mediastinal, lower cervical, and axillary lymph nodes, in the spine and other bones (roentgenological recognition is often later than clinical symptoms and signs), brain, liver, and adrenals. 2. As to operation, in fighting cancer, great risks are justified. If an uncomplicated resection operation can be performed, the patient will probably leave the hospital in about 10 days, and there should be no scoliosis, lordosis or kyphosis. 3. Without successful surgery, death will probably occur in 3 to 12 months. Only surgery can cure a true bronchogenic carcinoma (excluding grade 1 carcinoma or adenoma or carcinoid). 4. High voltage roentgen therapy sometimes temporarily relieves pain and the symptoms of bronchial obstruction but only rarely lengthens life. Such treatment is only occasionally used after apparent complete cure of a bronchogenic carcinoma. Radium, isotopes or hormones have not been demonstrated to be of value.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PETTING, KISSING, AND TUBERCULOSIS

TO THE EDITOR:—*What are the chances of contracting tuberculosis at parties at which there is the usual petting and kissing? I am wondering about the advisability of following such parties with a prophylaxis of some sort.*

M.D., Illinois.

ANSWER.—Many tuberculous infections are transmitted by kissing. In the average population, however, the chances are not over about 1 in 500 that unknowns would have a form of disease that could be transmitted by kissing. Of each of the exposed guests, probably only one in many would have bacilli aspirated into the lungs where infection could result; of each such aspiration perhaps only 1 in about 10 would produce a significant lesion, with about one-third of the latter resulting in clinical disease.

The chances of disease resulting are, therefore, only one to many thousands for each person present. In a group of 10 persons, there is a possibility that some may be diseased, both male and female. An increase in size of the group increases the possibility of spread of infection but still leaves the chances of infection by such means remote. Furthermore, the time between the development of positive sputum and the diagnosis generally is short in that age group. Either they will have had a chest x-ray, or clinical symptoms will advance so rapidly that a diagnosis can be made clinically within a period of a year. Like lightning, however, an infection may strike from any quarter at any time, and there is no guarantee of safety. There is almost as much danger from persons coughing or contaminating objects in public. After all, the chances are little more than are encountered in daily life and there is a calculated risk in almost anything. Since man is a social creature, he must expect risks in social contacts, even in petting parties. The other alternative is to become a hermit or a bore.

The best way to insure against acquiring infections from such sources is to know in general the personal and family history of the persons present. Appearance alone is deceiving and is unfair to many poorly nourished girls, while certain open cases of tuberculosis appear in robust persons. Above all, one should not become a hypochrondriac. From a public health standpoint, such parties are not to be recommended.

There is no certain way of prophylaxis against tubercle bacilli in the mouth, especially several hours after such a party. Most of the bacilli, however, would be swallowed and would pass through the gastrointestinal tract. Only a few are aspirated or gravitate into the lungs.

INDUCTION OF LABOR

TO THE EDITOR:—*It seems to be an increasingly common practice to induce labor for no indication other than the convenience of the attendant or the parturient. Can this be considered good obstetric practice?*

M.D., Nebraska.

ANSWER.—The answer is unquestionably that this is not good practice in general. One must, however, consider in this problem the following factors. 1. The group at Evanston Hospital, Evanston, Ill., found that it was perfectly safe to induce labor by rupture of the membranes if the patient was near term, the cervix was soft and effaced, and if there were no contraindications such as malposition. 2. There is an increasing number of patients with very short labors with their first pregnancy and there are many multiparas who barely get to the hospital in time for delivery. 3. With the advantage of the sulfonamides, the antibiotics and better prenatal and intranatal care, there is now such a low morbidity and mortality that many procedures are probably done now that never would have been dreamed of 20 years

ago. 4. With the additional factor of better pediatric care, more mature babies are being saved. 5. Many of us at times have wished we could induce labor early for one reason or another, such as toxemia or cephalopelvic disproportion. 6. One must admit that if it were possible and safe, it would certainly be to the advantage of both patient and physician for the baby to be delivered at a reasonable hour.

Perhaps in a few more years we will consider this normal practice and until then accept an attitude of tongue-in-cheek toward it, rather than one of lifted eyebrows. Certainly the burden of proof of its safety is on the shoulders of those who practice early induction.

NEUROFIBROMATOSIS

To the Editor:—*What is the treatment of neurofibromatosis, and what should be done for the pigmentations that probably are the result of the irritation of the nerve covering near the skin? Is there any known specific or preventive treatment for neurofibromatosis?* *Jacob Aisenstat, M.D., New York.*

Answer.—Neurofibromatosis or Von Recklinghausen's disease is a hereditary condition. The pigmentation in the skin is part of the disease and not the result of nerve irritation. Ordinarily, the cutaneous manifestations of the disease require no treatment. At times, however, large or pendulous plexiform neurinomas involving the skin produce unsightly or inconvenient masses that can be excised. Neurofibromas within various peripheral nerves may interfere with the function of those nerves. These usually can be extirpated without serious injury to the nerve itself. Sometimes neurofibromas in the soft tissues of the body undergo sarcomatous degeneration, but this usually occurs in persons with isolated lesions. It is seldom seen in generalized neurofibromatosis. These sarcomas are often not highly malignant, although they do tend to recur locally if they are not completely excised. At times a more malignant variety is seen. The most serious lesions that occur in this condition are those neurofibromas that occur within the spinal canal and press on the spinal cord; the neurinomas that develop on the various cranial nerves, particularly on the eighth or auditory nerve, compress the brain stem and produce increased intracranial pressure; and meningiomas that arise from the meninges covering the brain and which are often multiple. Such tumors must be dealt with as one would deal with any intracranial or intraspinal tumor; that is, by excision, if possible. There is no specific treatment for neurofibromatosis.

SYPHILIS

To the Editor:—*A patient with latent congenital or latent acquired (from wet nurse) syphilis was treated energetically one year ago but still has a 1 + blood Wassermann reaction. He is married and has two children, living and well. 1. Can latent congenital syphilis be cured? 2. Can congenital syphilis be transmitted to the third generation? 3. Does the positive reaction mean that he has syphilis? 4. Is congenital or latent syphilis contagious to partners? 5. Can he be cured by penicillin? 6. Can a negative blood reaction be obtained in latent syphilis after treatment?*

Teh Hwa Shih, M.D., Taipeh, Taiwan (Formosa) China.

Answer.—1. Latent syphilis may remain latent throughout life, progress into some form of late syphilis, or be cured. 2. Transmission of congenital syphilis into the third generation is exceedingly rare. 3. The positive reaction in this case probably means merely that the serologic test of the blood still gives a slightly positive reaction. The status of the cerebrospinal fluid should be determined. 4. No. 5. A cure cannot be predicted. If it is decided to treat this patient, penicillin should be employed because it is quicker, less expensive, and less dangerous than heavy metals. The ultimate results, however, are no better than those from heavy metals. If the patient has had an adequate amount of treatment and remains well clinically and the serologic titer of the blood does not rise, it is not necessary to give more treatment. 6. The serologic reaction of the blood may become negative in time, remain fixed, or become progressively stronger. Only in the latter event should one consider giving more treatment.

CYSTITIS FOLLOWING INTERCOURSE

To the Editor:—*The query entitled "Cystitis Following Intercourse" in* The Journal, *August 18, 1951, page 1546, was incompletely answered. The patient involved unquestionably has chronic urethritis which is aggravated by the sex act. Cystitis following intercourse is a common complaint in some of these cases. Dr. Hardy stated that the aggravated symptoms were controlled with antibiotics, indicating acute exacerbations of the chronic urethral infections. A careful urethroscopic examination would disclose this patient's pathology and suggest the treatment.*

Leander W. Riba, M.D.
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To the Editor:—*On page 1546 of* The Journal, *Aug. 18, 1951, is a question from Dr. Hardy entitled "Cystitis Following Intercourse." The symptoms associated with cystitis following intercourse are typical of that produced by urethral trauma, and I think the answer will be found only by doing a complete urethroscopy or panendoscopy.*

It is rather easy in these cases to put a sound into the urethra and palpate vaginally over the instrument. Usually there will be a tight meatus, and I doubt that this patient will be able to tolerate a No. 30 FS, which is usually about normal. There probably will be some periurethritis, and perhaps some small abscesses can be palpated. Occasionally it is possible to express pus by palpation over the instrument. If there is a meatal stricture, a simple meatotomy, which can be done in the office, usually is curative after the urethra is dilated for six to eight weeks to allow healing in the normal position. There may be some bladder neck or posterior urethral polyps or granulations that can be treated transurethrally.

I disagree strongly with the statement that a psychiatrist will be necessary. It is true that many such patients have been referred to psychiatrists without a complete examination, which should include urethroscopy, but it is much like diagnosing pulmonary tuberculosis without sputum examinations or x-rays for confirmation.

If the urethra is the source of trouble, it is logical to see how an inflamed, perhaps infected, urethra will interfere with intercourse for the female and would certainly result in cystitis after the trauma from intercourse had pushed enough infection from the urethra into the bladder. In the Journal of Urology (61:557 [March] 1949) *I reported on this matter, and the writings of Dr. A. I. Folsom should have called the attention of the medical profession to this problem in the past.*

Norborne B. Powell, M.D.
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Houston 5, Texas.

To the Editor:—*I would like to take issue with the answer to the question on cystitis following intercourse appearing in* The Journal *of Aug. 18, 1951 (page 1546). Information was submitted that this woman repeatedly had cystitis one to three days after intercourse and at no other time. The urinary infection was controlled promptly by chemotherapy or antibiotics and was not apparent between attacks. The point was not made that the urethra is the most probable site of disease, and an infection of Skene's glands should be ruled out first. Cystoscopy was advised. It is often assumed that cystoscopy includes observation of the urethra, but too frequently it does not. Cystourethroscopy should be advised, and in this case the urethroscopy is of greatest importance. A small diverticulum of the urethra or a pseudodiverticulum in the form of a pocket at the site of an old infected Skene's gland may be present. This seems to me to be a clear-cut picture of organic disease. That the gastrointestinal tract might be simulating cystitis and the last suggestion that the patient might need a psychiatrist seem far afield for a patient with pus in the urine controlled with drugs.*

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Medical College of Georgia, Augusta.

V 147
1951